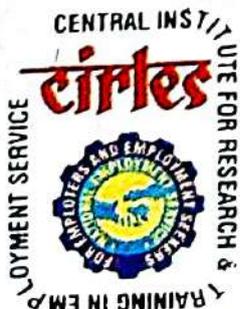
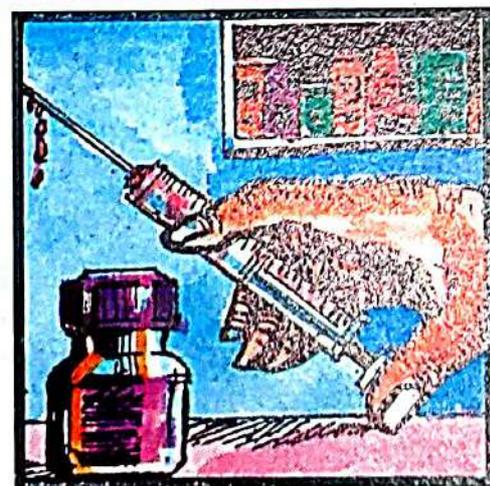
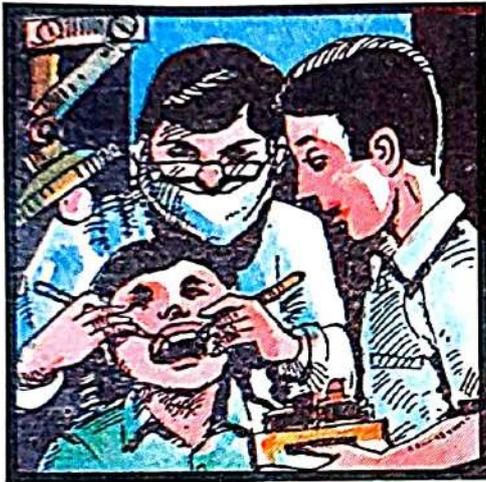




सत्यमेव जयते

WORLD OF WORK SERIES

# CAREER OPPORTUNITIES IN PARAMEDICAL AND SUPPORTIVE OCCUPATIONS



CAREER STUDY CENTRE  
CENTRAL INSTITUTE FOR RESEARCH AND TRAINING  
IN EMPLOYMENT SERVICE (DGE&T)  
MINISTRY OF LABOUR AND EMPLOYMENT  
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## PREFACE

The Central Institute for Research and Training in Employment Service (CIRTES) has been engaged in the development of career literature for the benefit of unemployed youth, job-seekers, students, parents, teacher-counsellors etc. Publications developed by this Institute are effectively being used by all Employment Exchanges, Schools, Colleges and other Educational Institutions to provide effective vocational guidance and employment counselling to the needy persons.

The industrial growth and scientific and technological development have resulted into the emergence of new fields of knowledge and various new occupations. Similarly, in the field of medical science, new methodologies, tools and techniques have been emerged out specially in diagnostic and therapeutic fields. Resultantly, the need of trained personnel with requisite level of knowledge and skill required to handle different diagnostic and therapeutic gadgets transformed into new occupations in paramedical fields like Medical Laboratory Technician, Medical Transcription, Physio and Occupational Therapists etc. which are quite in demand globally.

It is a known fact that majority of students with educational qualification of Higher Secondary (Science Stream) with Biology concentrate and compete only for Medical Courses. Due to the tough competition in the field, most of them could not be able to enter into the field and resultantly out of frustration and lack of knowledge about the alternative field, they could not opt for some promising fields of paramedical courses. This publication contains the information of some important and promising paramedical courses and institutes offering courses leading to equally important and promising occupations.

It is hoped that this publication on the subject will prove to be meaningful and effective for the job-seekers, youth seeking a career in paramedical and supportive occupations.

Suggestions for improvement are welcome.



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## I. INTRODUCTION

Dear student, if you have studied 10+2 with Biological Science and want to enter into a career in medical field, however, due to heavy competition and availability of only limited seats you could not get admission to MBBS, don't worry. Joining a medical college as an MBBS student is not the only route for entering into the medical field. With the increase in medical facilities, hospitals, health care centres, polyclinics, nursing homes and diagnostic centres, there is a demand not only for trained doctors and surgeons in various fields of specialization, but there is also a need for various paramedical experts and technicians. These experts and technicians have a very important role to play in helping the doctor to make an accurate diagnosis for giving proper medical treatment under the caring and supportive environment for speedy recovery of the patient from different diseases.

Diagnostic and therapeutic equipments in the field of medicine are technically advanced and need trained personnel to handle them properly and operate them carefully for providing treatment and therapy. Paramedics' work in varied specialized fields involves making the use of extremely sophisticated equipments and assisting medical practitioners in their work by carrying out diagnostic investigation, recording their results on carrying out prescribed therapy.

- Paramedics' support is invaluable for medical professionals. Their work is challenging, as it requires them to carry out work as prescribed by medical practitioners as well as to develop the confidence into the minds of the patients in the treatment being provided to them.

Medical Laboratory Technicians help in conducting different tests to diagnose the ailment. Physiotherapists, occupational therapists and pharmacists, together help in providing the requisite treatments and care of patients. These disciplines are, in fact, closely concerned with assisting the disabled, paralysed and handicapped people return to normalcy. Technology in the field of medicine is advancing by leaps and bounds. As a result, the need for trained personnel to operate, utilize and interpret the new equipment is also increasing rapidly.

Many young men do not know about these occupations and hence due to ignorance they do not try to accept them as their prospective future career. Sometimes these occupations are looked down as inferior because of social or economic status of the family and accepting them would stake that false honour and dignity. This is absolutely wrong since each occupation has its own dignity and honour. To avoid such misconceptions and to get a clear idea about different areas of Paramedical Sciences, duties performed by these people and probable choice of careers, courses offered by various institutions have been compiled in this publication, which could prove to be useful for you.

These expertised fields are intact to each other and work closely for the betterment of the patients, specially the disabled, paralyzed and handicapped persons to bring them under normalcy. It is also true that with the passage of time, the change in the tools and techniques to be used in the medical fields is also changing very fast. New tools and techniques are emerging out, which of course are of advanced nature. To operate them, trained personnel are needed in the field. Some of you could be one of them.

## II. DIFFERENT FIELDS IN THE PARAMEDICAL SCIENCE

### I. MEDICAL LABORATORY TECHNOLOGY

#### Introduction

Medical Laboratory Technology is concerned with the collection, sampling, testing, analyzing and synthesizing, reporting and documentation of laboratory investigations. Medical laboratory technology also called as clinical laboratory science is an allied health profession, which is concerned with the diagnosis, treatment and prevention of disease through the use of clinical laboratory tests. These tests help doctors to detect or diagnose the diseases and treat them. A Medical Laboratory Technologist (MLT) undertakes these tests by analyzing body fluids, tissues, blood typing, micro-organism screening, chemical analyses, cell counts of human body etc. They play an important role in collecting the information, sampling, testing, reporting and documentation of these investigations. They determine the presence, extent or absence of disease and provide data needed to evaluate the effectiveness of treatment.

There are two levels of medical laboratory workers – Technologists and Technicians.

**Medical Technologists** work in five major areas of the laboratory ie, Blood Banking, Clinical Chemistry (chemical analysis of body fluids), Hematology (blood related), Immunology (study of immune system) and Microbiology (study of bacteria and other disease organisms). They also work in the areas of cytotechnology (study of human tissue), phlebotomy, urinalysis, coagulation, parasitology and serology. Phlebotomists draw and test blood whereas Blood bank technologists determine correct blood types for transfusions. Histology technicians cut and stain tissue samples.

#### Nature of Work

The Medical Laboratory Technologists/Technicians may be assigned to a specialized area of work in a large medical lab. In small labs, they may perform a variety of tests in all areas of lab work. Some of the duties of an MLT include collecting blood samples from patients and identifying abnormal blood cells, assuring safe transfusion of blood

products, culturing micro-organisms to determine their identity and susceptibility to antibiotics, detecting a cancerous tumor with DNA technique, performing cultures and identifying bacteria and viruses, analyzing body fluids to determine chemical and biological components, assuming administrative functions relating to reporting and recording results of tests conducted in the laboratory, maintaining accurate clinical records, selecting and evaluating laboratory equipment and new test methodologies and performing other duties as may be assigned by the laboratory supervisor. In large labs and hospitals, they may have to work in shifts, on holidays and weekends or sometimes be on call for night duty.

Medical Technologists perform complex tests such as microscopic examinations of tissues, blood and other body fluids to detect evidence of disease and detect the presence of bacteria, fungi, parasites etc and chemical tests to determine blood cholesterol levels. They also match blood samples for transfusions and test drug levels in blood to determine how patients are responding to medications. They are often responsible for making sure that testing is done accurately. In some labs, technologists conduct research under the supervision of medical researchers.

**Medical Technicians** undertake routine laboratory testing manually according to instructions. They work under Technologists or Supervisors. Technicians may prepare specimens and operate machines that automatically analyze samples. In addition, the technicians set up, clean, and maintain laboratory equipments, such as centrifuges, microscopes etc. They also prepare standard solutions for use in the lab. This involves measuring and mixing the correct amount of various chemicals.

### **Traits Required**

Every job has requisite types and levels of different traits needed for predicting success in the field of performance. Similarly following are the traits required at requisite level for performance made in Medical Laboratory Technology.

- Speed and accuracy,
- Analytical and synthesis ability,
- Judgmental ability,
- Neuro-muscular co-ordination.

### Courses in Lab Technology

Different levels of training courses are offered in Lab Technology such as Bachelor, Diploma and Certificate. Bachelor of Medical Laboratory Technology (BMLT) course for Medical Lab Technologists is structured to train students in the clinical laboratory analysis of blood, urine, feces, cerebrospinal fluid, synovial fluid, ascetic fluid etc to aid the doctors in arriving at a correct diagnosis and treatment of the disease. There are also Diploma / Certificate courses for lab technicians / assistants in general and in different specialities such as Diplomas in EEG Lab Technician, Histopathology Lab Technician etc. Training facilities are provided by colleges, universities as well as hospitals which are usually affiliated to the universities.

As in the case of other courses, the candidates seeking admission in different types/levels of Lab Technology Courses should have fulfilled the requisite level of eligibility criteria, which is given in the following table. The list of institutes offering different courses are given at Annexure-I.

Name of the course	Level	Minimum educational qualification required	Period of training	Remarks
BMLT	Graduate	10+2 or equivalent with science subjects or Pre-University vocational course from a recognized board with Laboratory Technology as Vocational subject.	Three years	
DMLT	Diploma	10+2 or its equivalent examination from recognized university or board.	Two years	
Certificate course	Certificate	10+2	Six months or One year	

### **Job Prospects and Career Opportunities**

The career of a lab worker depends on academic and technical skills. A certified Medical Laboratory Technician may find a challenging career in a hospital, minor emergency centres, private laboratory, blood donor centres, doctor's office or clinics. A technician can become a technologist through further education and work experience. Laboratory technologists can assist the doctors in taking samples, centrifuging, making slides, using specified stains etc, under proper guidance. As such, the demand for laboratory technologists will always increase since the numbers of hospitals, speciality hospitals, laboratories etc. are increasing. Job opportunities are also available in research laboratories and military service etc.

Technologists can advance to supervisory or management positions in labs and hospitals. They can also work as Laboratory Manager/Consultant/Supervisor, Health Care Administrator, Hospital Outreach Coordinator, Laboratory Information System Analyst/Consultant, Educational Consultant / Coordinator/ Director, Health and Safety Officer etc. Additional opportunities are available in molecular diagnostics, molecular biotechnology companies and in vitro fertilization laboratories as well as in research labs. In the clinical areas, drug testing, therapeutic drug monitoring and biogenetics are just a few of the specialities with openings. In industry, medical technologists are needed for positions in product development, marketing, sales, quality assurance, environmental health and insurance, among others.

## 2. PHYSIOTHERAPY

### Introduction

Physiotherapy covers the use of exercises, related equipment, electrotherapy, magneto-therapy, massage etc. to rebuild damaged muscles, ligaments and bones. Physiotherapy means physio-therapeutic system of medicine which includes examination, treatment, advice and instructions to any person in connection with movement, dysfunction, bodily malfunction, physical disorder, disability, healing and pain from trauma and disease.

The physiotherapists' skills are required by the health care team in most disciplines of medicine including surgery, neurology, orthopaedics, gynecology, obstetrics, dermatology, ENT, cardio-thoracic, vascular surgery, burns, plastic surgery, pediatrics, rehabilitation and sports medicine, etc.

### Need of Physiotherapy

The purpose of physiotherapy is to decrease body dysfunctions, reduce pain caused either by trauma, inflammation, degeneration and surgery. The various conditions in which physiotherapy is useful are as follows :—

1. Management of a fracture and return to normal function is possible with simple methods of physiotherapy. It allows for regain of full joint movements and muscles power after healing of a fracture.
2. In joints and soft tissue injury, rapid repair of damaged tissue occurs with quick reduction of pain and swelling.
3. Restoration of full joint movements with reduction of pain and deformity is possible in various kinds of joint diseases like osteoarthritis, rheumatoid arthritis, juvenile arthritis etc.
4. In degenerative disease of spine, physiotherapy arrests the progress of disease as in cervical spondylosis, ankylosing spondylosis. Suitable arthrodeses are also provided for giving support to spine. It also has a major role to play in congenital disease of spine like spina bifida.

5. Chest physiotherapy has a vital role to play not only in medical and surgical conditions like bronchial asthma, chronic obstructive lungs disease and pneumothorax but also in surgical procedures involving spine, pelvis, extremities and abdomen.
6. In hemiplegia or paraplegia, physiotherapy greatly helps the patient to gradually increase his mobility.
7. In children, physiotherapy is assuming real importance in children with cerebral palsy, spina bifida, clubfoot, muscular dystrophy etc.
8. It eases labour and return to normal after delivery. It is also useful in gynecological problems like incontinence, prolepses of uterus, pelvis inflammatory disease.
9. Sports medicine—A physiotherapist is mandatory for any sport event. He maintains the fitness of sports persons and provide first-aid in case of various sports injuries.

### **Nature of Work**

The work done by physiotherapists involves helping those who have been incapacitated by accidents, illness or birth defects, to regain normal bodily functions as soon as possible. The physiotherapists work, not for the injured alone, but for a whole range of people, including small children, polio patients, athletes, sports persons, industrial workers and elderly people suffering from ailments such as arthritis and rheumatism.

Physiotherapists work as members of medical teams, in co-operation with physicians and other specialists. Their work involves treating patients who are suffering through various therapeutic methods.

### **Physical Exercises and Therapy**

Various ailments including arthritis, spondylosis, neurological disorders and heart diseases are treated through exercises and therapy. Paralysed and handicapped patients are taught to perform basic physical exercises, to encourage the movement of their limbs and other organs. Other physical exercises are also taught to the patients. Therapy is also done in the form of heat radiations, electric and water therapy, diathermy, massages to cure weak muscles, tractions and other such therapies. Heart

and asthmatic patients are made to undertake breathing exercises. Pre-natal and ante-natal exercises are also conducted and pregnant women are made to perform specific physical exercises to maintain the normal physical and mental health.

### **Examining Patients Prior to Treatment**

Physicians usually consult physiotherapists before they begin administering treatment to patients for whom physiotherapy is required. They may also conduct muscle and nerve tests, so as to determine the degree of incapacity of the patients.

### **Treatment of Convalescents**

It is the responsibility of the physiotherapist to restore a patient to his/her optimal body functions after a surgery. Convalescents are treated as a part of a follow-up programme, with a view to rehabilitate the patient to a condition of normalcy.

### **Traits Required**

- Higher order of analytical and synthesis ability
- A positive attitude
- Ability for teamwork
- Ability to work during odd hours
- Sympathetic approach towards patients
- Ability to instill inspiration and courage in patients
- Calm and cool temperament, Patience

### **Courses and Eligibility**

#### **1. Bachelor of Physiotherapy/ B. Sc. (Hons.) Physical Therapy.**

- Duration : 4½ years (Including Internship)
- Eligibility for admission : Inter Science with Biology with 50% marks.
- Process of admission : Through entrance test. Entrance test will be held in April or May.
- Age : Not less than 17 years.

## 2. Master in Physiotherapy (M.P.T.)

Duration	: 2 years
Eligibility	: B.P.T. (4 ½ years)
Speciality	: Neurology, Orthopedic/ Musculoskeletal, Sports, Cardio-thoracic and Rehabilitation.

Commencement of the course: The course will commence from the 1st April, every year.

### Training Facilities

With the passage of time, the field of Physiotherapy is drawing the attention of the people in all over the world including India. Different technical colleges and universities are offering training at Graduation and Post Graduation levels. Some Diploma or Certificate level courses are also available in some of the institutions. The list of institutions offering different courses in the field is given at Annexure-II.

### Career Opportunities

Employment opportunities for Physiotherapists are tremendous. A Physiotherapist could be employed in any of the following establishments/organizations/institutions :

Rehabilitation Department of Hospitals, Nursing homes, Residential homes/Rehabilitation centres, Private offices/Private practices/Private clinics, Out-patient clinics, Community health care centres/Primary health care centres.

Fitness centres/Health clubs

Occupational health centres

The Institute of the Physically Handicapped

Special Schools

Sports Centres

N. G. O.

Public settings (e.g. shopping malls)

Defence Medical Establishments

Teaching in the schools of Physiotherapy.

### 3. OCCUPATIONAL THERAPY

#### Introduction

Occupational Therapy trains in the rehabilitation of physically and mentally impaired persons. Occupational therapists (OTs) help people to improve their ability to perform tasks in their daily living and working environments. They work with individuals who have conditions that are mentally, physically, developmentally or emotionally disabling. They also help them to develop, recover or maintain daily living and work skills. Occupational therapists help clients not only to improve their basic motor functions and reasoning abilities, but also to compensate for permanent loss of function. Their goal is to help clients to have independent, productive and satisfying lives.

Occupational therapists assist clients in performing activities of all types, ranging from using a computer to caring for daily needs such as dressing, cooking and eating. Physical exercises may be used to increase strength and dexterity, while other activities may be chosen to improve visual acuity and the ability to discern patterns. For example, a client with short-term memory loss might be encouraged to make lists to aid recall, and a person with coordination problems might be assigned exercises to improve eye-hand coordination. Occupational therapists also use computer programmes to help clients improve decision making, abstract-reasoning, problem-solving, and perceptual skills, as well as memory-sequencing and coordination—all of which are important for independent living.

Therapists instruct those with permanent disabilities, such as spinal cord injuries, cerebral palsy or muscular dystrophy, in the use of adaptive equipment, including wheelchairs, orthotics and aids for eating and dressing. They also design or make special equipment needed at home or at work. Therapists develop computer-aided adaptive equipment and teach clients with severe limitations how to use that equipment in order to communicate better and control various aspects of their environment.

Some occupational therapists treat individuals whose ability to function in a work environment has been impaired. These practitioners arrange employment, evaluate the work environment, plan work activities,

and assess the client's progress. Therapists also may collaborate with the client and the employer to modify the work environment so that the work can be successfully completed.

Occupational therapists use specialized knowledge to help individuals perform daily living skills and achieve maximum independence. Other workers performing similar duties include audiologists, chiropractors, physical therapists, recreational therapists, rehabilitation counsellors, respiratory therapists and speech-language pathologists.

### **Nature of Work**

Occupational therapists may work exclusively with individuals in a particular age group or with particular disabilities. In schools, for example, they evaluate children's abilities, recommend and provide therapy, modify classroom equipment and help children participate as fully as possible in school programmes and activities. Early intervention therapy services are provided to infants and toddlers who have, or at the risk of having, developmental delays. Specific therapies may include facilitating the use of the hands, promoting skills for listening and following directions, fostering social play skills or teaching dressing and grooming skills.

Occupational therapy also is beneficial to the elderly population. Therapists help the elderly lead more productive, active and independent lives through a variety of methods, including the use of adaptive equipment. Therapists with specialized training in driver rehabilitation assess an individual's ability to drive using both clinical and on-the-road tests. The evaluations allow the therapist to make recommendations for adaptive equipment, training to prolong driving independence and alternative transportation options. Occupational therapists also work with the client to assess the home for hazards and to identify environmental factors that contribute to falls.

Occupational therapists in mental health settings treat individuals who are mentally ill, mentally retarded or emotionally disturbed. To treat these problems, therapists choose activities that help people learn to engage in and cope with daily life. Activities include time management skills, budgeting, shopping, homemaking and the use of public transportation.

Occupational therapists also may work with individuals who are dealing with alcoholism, drug abuse, depression, eating disorders or stress-related disorders.

Assessing and recording a client's activities and progress is an important part of an occupational therapist's job. Accurate records are essential for evaluating clients, for billing and for reporting to physicians and other health care providers.

In large rehabilitation centres, therapists may work in spacious rooms equipped with machines, tools, and other devices generating noise. The work can be tiring, because therapists are on their feet much of the time. Those providing home health care services may spend time driving from appointment to appointment. Therapists also face hazards such as back strain from lifting and moving clients and equipment.

### Traits Required

Occupational therapists need patience and strong interpersonal skills to inspire trust and respect in their clients.

Patience is necessary because many clients may not show rapid improvement.

Ingenuity and imagination in adapting activities to individual needs are assets.

Those working in home health care services must be able to adapt to a variety of settings.

### Education/Training

Different levels of courses available in this field are Diploma course and Degree course. Some institutes are offering two-year Diploma courses and some other institutes are offering three-year Diploma courses. For example, The Patna Medical College in Bihar provides a two-year Diploma course in Occupational Therapy. The Institute of Physically Handicapped in New Delhi offers a three-year Diploma course in Occupational Therapy.

The Rehabilitation Council of India in New Delhi conducts a joint entrance examination for admission to the first year of the professional courses in Physiotherapy and Occupational therapy. These courses are

available as B.Sc. courses of 3½ years' duration at the National Institute of Rehabilitation Training and Research in Cuttack and the National Institute for the Orthopaedically Handicapped in Kolkata.

### **Eligibility**

Candidates who have cleared 10+2 or the intermediate-level examination with a background in Science are eligible for the Degree and Diploma courses in Occupational Therapy.

### **Career Opportunities**

Over the long run, the demand for occupational therapists should continue to rise as a result of growth in the number of individuals with disabilities or limited function who require therapy services. In addition, medical advances now enable more patients with critical problems to survive—patients who ultimately may need extensive therapy.

The largest number of jobs was in hospitals. Other major employers were offices of other health practitioners (including offices of occupational therapists), public and private educational services and nursing care facilities. Home health care services, out-patient care centres, offices of physicians, individual and family services and community care facilities employed some occupational therapists for the elderly and government agencies.

A small number of occupational therapists were self-employed in private practice. These practitioners saw clients referred by physicians or other health professionals or provided contract or consulting services to nursing care facilities, schools, adult day care programmes and home health care agencies.

## 4. OPTOMETRY OF OPHTHALMIC TECHNOLOGY

### Introduction

As per Vision 2020 "The Right to Sight" is a global initiative to help eliminate avoidable blindness by the year 2020. Jointly launched by the WHO and the International Agency for the Prevention of Blindness (IAPB), the key areas are creation of adequate eye-care facilities, particularly in underprivileged areas; implementation of specific programmes to control the major causes of blindness; and creation of a foundation of well-trained eye-care workers. Here, the eye-care workers also include ophthalmic medical assistants, ophthalmic nurses and refractionists, who can be broadly put together under the category of Optometrists.

If we look at some facts and figures, every third blind person in the world lives in India, 80% of which can be ascribed to preventive blindness (cataract, refractive error), underscoring the need for timely detection and treatment. Whereas, India needs at least 40,000 optometrists, the figure stands at a measly 6,000.

According to an estimate by the World Health Organisation, 37 million people worldwide are blind and additionally, 1-2 million persons go blind every year. In fact, without proper interventions the number of blind people across the world will increase to an alarming 75 million by 2020. The good news, however, is that 75% of this blindness is treatable and or preventable with timely and proper medical intervention.

### About Optometrists

An optometrist is a professionally qualified primary eye-care provider. In India optometrists usually assist ophthalmologists or recommend patients to specialists for secondary and tertiary treatment. An optometrist tests the visual acuity and prescribes corrective lenses. Adept at handling eye-testing equipment to examine a person's vision, the optometrist also fabricates lenses to prescribed specifications and fits them and other low vision aids to suit individual requirements.

With an increasing aged population and the growing incidence of macular degeneration and diabetic retinopathy, optometrists can be an

important part of the treatment. Besides the need for spectacles and contact lenses, low vision aids and co-management of eye disorders indicates that Optometry is a very lucrative profession for aspiring students and Indian optometrists are in demand abroad as well, especially in African and Middle Eastern countries, besides New Zealand and Fiji.

### **Nature of Work**

Optometrists have a crucial role to play in society as they are the first contact of a patient suffering from vision problem, especially in the peripheries. They perform refractions, detect visual disorders that are then managed by the physicians and conduct screening programmes on blindness, glaucoma and so on.

Optometrists are a link between a doctor and patient. They conduct investigations and provide pre and post-operative eye-care that allows more time to a busy ophthalmologist. The work profile of an optometrist is quite vast. He can be involved in refraction that includes contact lens workup, lasik workup and so on, perform vision tests, conduct investigations like tonometry, muscular imbalance, squint workup, glaucoma screening, prescribe glasses and other low vision aids and ensure proper lens implantation, among others.

### **Traits Required**

A calm temperament

Concentration, Judgement and Accuracy

Scientific temper

Agreeableness

An understanding of people of all ages, temperaments and backgrounds

The ability to infuse self-confidence in the patients

### **Training Facilities**

Different levels of courses available in this field are Diploma level and Degree level. Diploma courses of two years' duration are available in various institutes, including the Government Ophthalmic Hospital, Chennai, The Government Medical College in Aurangabad and Nagpur and Gandhi Eye Hospital, Aligarh.

Diploma courses of three years are also available in some institutes like Jaslok Hospital in Mumbai.

The All India Institute of Medical Sciences in New Delhi offers a B.Sc. course in Optometry.

Indira Gandhi National Open University (IGNOU) is also launching a four-year B.Sc. (Ophthalmic Technique) programme.

### **Eligibility**

Students who wish to do a Diploma or Degree course in Ophthalmic Technology should have cleared the 10+2 or equivalent examination with a minimum of 50% marks in Physics, Chemistry and Biology.

### **Career Opportunities**

In government hospitals, private medical establishments and eye-clinics, one can work as refractionists, ophthalmic technical assistants and optometrists. Degree holders in optometry are eligible for higher education in optometry, biotechnology, biochemistry and other allied fields and can even take up teaching as a profession. At optical shops, in the private sector, optometrists almost run the entire show and do very well if they come up with their own establishment. Multinational companies in vision care and optical aids also absorb trained optometrists at lucrative packages.

Optometrists usually work in eye hospitals, clinics and opticians' outlets or with multinational vision care companies. You may also specialise in particular types of vision disorders (squints, colour-blindness). After gaining experience in a private establishment or with a lens manufacturer, you can open your own business.

## 5. MEDICAL TRANSCRIPTION

### **Introduction**

Medical Transcription is the process of translating from oral to printed form the record of the medical history and treatment of patients.

Medical Transcription is one of the fastest growing fields in health care. Medical Transcriptionists are in demand in western countries especially in the US where the entire healthcare industry is based on insurance and detailed medical records are needed for processing insurance claims. Medical transcription could be one of the speedy growing IT enabled service in India also, with the rapid change in the outlook in Indian healthcare and privatization of the insurance sector. India provides an ideal location for conducting medical transcription with the large population of educated English speaking people and the comparative low cost which encourages companies abroad to outsource their work to the Indian medical transcription field.

### **Nature of Work**

Medical transcription is an interesting and challenging career. It is the process whereby one accurately and swiftly transcribes medical records dictated by doctors and others, including history and physical reports, clinic notes, office notes, operative reports, consultation notes, discharge summaries, letters, psychiatric evaluations, laboratory reports, X-ray reports and pathological reports. Medical Transcriptionist is a person who assists physicians and specially surgeons usually by transcribing, formatting and proof reading their dictated medically oriented report of a patient's health history. This dictation covers pretty much everything that takes place between the health care provider and the patient. Usually, the information dictated by doctors is recorded either into tape or onto digital voice processing systems. The process of medical transcription is transferring this information using word processing. Transcription services range from small, one-person home-based businesses to sophisticated, high-tech corporations which employ transcriptionists. Some medical transcription services now employ both 'on-site' and home-based medical transcriptionists. Medical transcription services serve client hospitals throughout the nation and abroad.

### **Traits Required**

- Good listening and understanding skills
- Ability to follow diverse accents, dialectical variations, varying dictation skills
- Must be acquainted with medical language and terminology
- Skills for typing fast accurately
- Higher order of dexterity

### **Education and Training Facilities**

There are a number of reputed training schools, including medical transcription companies, whose training programmes conform to standards set by the American Association for Medical Transcription (AAMT). Some of these institutes also receive technical support from US transcription companies. The training covers computer basics, operation of dictation and transcription word processing equipment, English language with particular reference to American English style, comprehension of medical language and terminology, names of drugs, medico-legal concept and ethics, and techniques and practices of medical transcription. After acquiring adequate work-experience, qualified transcriptionists can take-up certification offered by the AAMT to become Certified Medical Transcriptionists.

### **Eligibility**

It does not require specialised IT skills but it requires primary skills like language skills and knowledge of medical terms. Fluency in English, especially understanding of American way of speech and accent is a must to be in this field.

However, an ideal qualification for a Medical Transcriptionist is graduation with English. Comprehension skill and undergoing a training course in MT is an added advantage. Further, the candidate should be able to quickly develop new skills and adjust with the different accents and diction. Throughout the career as a medical transcriptionist one would need to keep up with changes in medical terminologies, medical procedures etc. and have the ability to detect medical inconsistencies in dictation and fix poor grammar and syntax. One must also have patience, as the work may get monotonous and repetitive. Regular comprehensive quality training is necessary to be successful in this field.

## Career Opportunities

In India there was a boom in this industry couple of years back with a lot of companies and training institutes entering this field. Most companies except a few could not survive due to lack of proper training and understanding of this comparatively new concept in India. By improving the work standards and quality of service, India has a wide scope for capturing the huge clientele in the US and provides employment opportunities to the huge mass of English speaking and computer literate people in the country. The success of the surviving companies proves that Medical Transcription can hold a vital link in altering the Indian job scenario.

In India, lot of companies in the metros and major cities have ventured into the field. Since the job requires experience, these companies are expected to recruit a lot of people as trainees and then develop their skills so that they become experts in this field. It is a lucrative career with lot of benefits:

There are also additional perks and performance incentives. Usually there are editors who help the transcriptionists in their work. If the MTs can become independent and do editors' work also, they have better prospects to earn more. With experience one can move on to becoming a supervisor, editor, trainer or manager of a medical transcription unit. The list of institutions offering training in Medical Transcription is given at Annexure-IV.

## 6. DENTAL TECHNOLOGY

### Introduction

A dental disease often causes to create disease in other parts of the body and also adversely affects the general health. A Dental Surgeon, whether in private practice or in a hospital requires trained auxiliary personnel like Doctors in other fields. They are the **Dental Mechanics** or **Dental Technicians** and the **Dental Hygienist**. Dental Mechanics/Technicians are mostly men, however, the career of a Dental Hygienist is open to both boys and girls.

A Dental Technician is a personnel who makes artificial teeth, to replace the natural teeth in the mouth. This involves making of a single tooth or multiple teeth and can be a fixed prosthesis or a removable one. A Dental Laboratory Technician is an important and responsible member of the dental health care team. He generally works in coordination with a dentist or dentists and takes the work order as per their requirements. The technician is a skilled person who has command over the use of small hand instruments, has artistic ability and provides great accuracy and attention in producing the minutest detail in his work.

### Nature of Work

**Dental Mechanic:** A Dental Mechanic makes or repairs dental appliances and prepares denture including Inlay, Crown and Bridge work. His work is purely mechanical laboratory work on the instructions of a registered Dental Surgeon.

**Dental Hygienist:** A Dental Hygienist does oral prophylaxis, gives instructions in Oral Hygiene & Preventive Dentistry, assists the Dental Surgeon in chair-side work and manages the office. He/She works under the supervision of the Dental Surgeon.

The duties and work sphere of such a technician is quite challenging as every specific prosthesis he makes has to be according to the specific needs of the patient. He follows the instructions and specifications of

the dentist and also sees the patient, if necessary. He takes the impressions from the dentist and builds an artificial prosthesis, which has to reproduce similar functions and be in harmony with the oral cavity as well as to give patient satisfaction. He creates full dentures, removable partial dentures, crowns, veneers and orthodontic appliances. A dental lab technician works with hand instruments and operates various electronic and manual devices like induction casting machines, furnaces, manual saw or lathe and model trimmers.

### **Traits Required**

They should have the ability to perform fine motor skills and work for long hours.

Their eyesight should be 20/20 and they should not be colour-blind.

They should be able to appreciate the shape of a tooth and should have a great colour scheme.

Their memory should be sharp and they should have the ability to read, write and retain.

### **Training/Qualification**

To become a Dental Mechanic or Dental Hygienist one has to undergo a regular two-year certificate course in a recognized dental institution. Presently there are 32 institutions in India at which, two-year certificate course in these areas is available. After passing this course one has to get himself registered with the concerned State Dental Council and obtain a certificate. The Dental Council of India has also accorded recognition to the Dental Mechanic and Dental Hygiene courses of the Armed Forces Medical College, Pune.

The course is Certified Dental Laboratory Technician in which he learns to make all the prosthesis along with which he learns to operate all the tools and equipments, gets complete know-how of the materials used and becomes familiar with all the technical terms used in dentistry.

### **Career Opportunities**

They work in commercial dental laboratories at various levels.

They can set up their own dental laboratory, big or small.

They can work as chair-side assistants to the dentists.

They are employed in dental colleges and hospitals.

Along with their regular job they can also start a lab at their home. It can be taken up as a part time profession too.

There is a great demand for dental technicians outside India. Given the mismatch between the demand especially in the field of cosmetic dentistry and their supply, job opportunities for skilled technicians are excellent.

The largest numbers of them are employed in dental institutions and Defence Dental Establishments.

The list of Institutes wherein the Dental Technician Courses are being run may be seen at Annexure-V.

## 7. THE PHARMACY

### Introduction

Pharmacy is the field of knowledge and performance wherein the person known as Pharmacist is a competent person who is academically and legally qualified to handle different drugs. The Pharmacy profession has made significant advances in the last few decades. 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 health care equipment.

They 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. He must observe high ethical standards particularly so because he is legally entrusted with the storage and distribution of dangerous or habit forming drugs and dispensing medicines. With more new drugs in the market, the role of the pharmacist is changing.

### Nature of Work

A Pharmacist's job is to prepare, mix, compound and/or dispense drugs and medicines on the basis of the prescription of a Medical Practitioner, Dentist or Veterinarian. He is also required to explain to the patients the mode of taking medicines and precautions to be observed while using medicines. He is acquainted with all legal requirements for maintaining proper records concerning the profession of Pharmacy.

In a retail pharmacy (drug store) he has to perform varied duties; buying and selling drugs and related items, inventory control and rejection of drugs whose shelf life has expired.

As a drug inspector Pharmacist has to make sure that the drugs of standard quality are only manufactured and sold in the market for the consumption of the patients.

As a medical representative he is to keep medical profession informed about the introduction of new drugs and their formulations from time to time.

As a drug analyst he is analyzing the samples of medicines filled by Drug Inspectors for their conformity to the prescribed standards.

### **Traits Required**

Prospective Pharmacists should have –

1. Manual dexterity
2. Accuracy and Precision
3. High degree of concentration
4. Good inter-personal communication skills
5. Ability to work for long hours
6. Sociability.

### **Educational 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 Physics, Chemistry and Mathematics (PCM) or Physics, Chemistry and Biology (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 followed by interview or counselling.

Scope : After passing Diploma in Pharmacy, one has to register with State Pharmacy Council for practicing Pharmacy.

#### ***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 followed by interview.

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

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

### *Masters' Programmes*

Sl.No.	Department	Degree	Eligibility
1	2	3	4
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	2	3
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 letter 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 50% marks or GPA of 5.75 on a 10 point scale or equivalent will be the eligibility criteria. The candidate should furnish a medical certificate indicating a minimum of 40% of physical defect or deformity duly signed by Medical Board and countersigned by Principal Medical Officer of a Government Hospital.

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

The list of the Institutes providing training facilities for different courses may be seen at Annexure-VI.

### **Career Opportunities**

The Pharmacist can find employment in hospitals, dispensaries, nursing homes, drug manufacturing houses and research laboratories both in public and private sectors. Drug Control Administration and Armed Forces also offer a wide range of opportunities to Pharmacists. In the pharmaceutical industry, Pharmacy graduates can get jobs in the areas of sales and marketing (Medical Representative) and production departments in different capacities. Corporate hospitals also provide job opportunities to these Pharmacists. Employment in R & D area both in the industry and research institutions needs post-graduate and doctoral degrees. Pharmacy teachers also require such qualification.

### **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 and 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 means the remuneration packages are good. 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 Abbnott 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.

## 8. NURSING

### **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 in examining, rehabilitating and convalescence of the clients. Nursing is a demanding career and involves shift duty on 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 outpatient clinics, physicians' consulting rooms in private nursing homes, school infirmaries etc. 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, Rehabilitation Techniques etc.

### **Nature of Work**

The profession demands 8 to 10 hours of work each day. A nurse has to measure and 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 the speedy recovery of patients.

### Traits Required

- Unstinted dedication
- Patience
- Professional commitment
- Orderliness in work
- Responsibility
- Punctuality
- Ability to work at odd hours
- Ability to make observations and decisions rapidly
- Ability to work as a part of a team
- Common sense and 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 impart training to female candidates, but the field is also open to males, although in fewer numbers.

### Admission Requirements

#### 1. *Auxiliary Nursing and Midwifery (ANM)*

Minimum education: 10<sup>th</sup> pass or equivalent from recognized institute with 45% marks.

#### 2. *General Nursing and Midwifery (GNM)*

Minimum and maximum age for admission will be 17 and 35 years respectively. For ANM/LHV, there is no age bar.

Minimum education :

- (a) 10+2 class passed or its equivalent preferably with Science (Physics, Chemistry and Biology) subjects with aggregate of 45% marks.

- (b) Those who have cleared 10+2 Vocational ANM course (revised after 2001) from a school recognized by Indian Nursing Council.
- (c) ANM training i.e. 10+1½ years training, should also have passed +2 or its equivalent examination.

Admission of students shall be once in a year.

Students shall be medically fit.

In addition to the above, admission procedure can be laid down by concerned State Nursing Council/Nursing Examination Boards like South India Board of Examinations (S.I.B.E.), Mid-India Board of Examinations (M.I.B.E.), Christian Medical Association of India (C.M.A.I.).

### **3. Basic B.Sc. (Nursing)**

The minimum age for admission shall be 17 years on or before 31st December of the year of admission.

The minimum educational requirements shall be the passing of :

Higher Secondary School Certificate Examination (12 years course)

or

Senior School Certificate Examination (10+2), Pre-degree Examination (10+2)

or

An equivalent with 12 years schooling from a recognized board or university with Science (Physics, Chemistry, Biology) and English with minimum of 50% aggregate marks (PCBE).

Candidate shall be medically fit.

### **4. Post-Basic B.Sc. (Nursing)**

To be eligible for admission to this course, a candidate shall have :

- (i) Passed the Higher Secondary or Senior Secondary or Intermediate or 10+2 or an equivalent examination recognised by the university for this purpose. Those who have done 10+1 in or before 1986, will be eligible for admission.

- (ii) Obtained a certificate in General Nursing and Midwifery and registered as Registered Nurse and Registered Midwife (R.N.R.M.) with the State Nurses Registration Council. A male nurse, trained before the implementation of the new integrated course besides being registered as a nurse with State Nurses Registration Council, shall produce evidence of training approved by Indian Nursing Council for a similar duration in lieu of midwifery in any one of the following areas :

O.T. Techniques

Ophthalmic Nursing

Leprosy Nursing

TB Nursing

Psychiatric Nursing

Neurological and Neurosurgical Nursing

Community Health Nursing

Cancer Nursing

Orthopedic Nursing

Candidates shall be medically fit.

### *5. M.Sc. (Nursing)*

The candidate should be a Registered Nurse and Registered Midwife or equivalent with any State Nursing Registration Council.

The minimum education requirements shall be the passing of B.Sc. Nursing / B.Sc. (Hons.) Nursing / Post-Basic B.Sc. Nursing with minimum of 55% aggregate marks.

The candidate should have undergone the full time (regular stream, not distance mode) course in B.Sc. Nursing / B.Sc. (Hons.) Nursing / Post-Basic B.Sc. Nursing in an institution which is recognized by Indian Nursing Council.

Minimum one year of work experience after Basic B.Sc. Nursing.

Minimum one year of work experience prior or after Post-Basic B.Sc. Nursing (regular stream).

Candidate shall be medically fit.

### Selection Method :

Selection of the candidates should be based on the merit of the entrance examination held by university or competent authority.

Indian Nursing Council is responsible for regulation and maintenance of uniform standards of training for Nurses, Midwives, Auxiliary Nurses & Midwives and Health Visitors. The Council prescribes the syllabi and regulations for various Nursing Courses.

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

### 6. Military Nursing Services

Directorate General of Medical Services (Army), AG<sup>2</sup> Branch conducts an examination for admission to 40 seats of 4-year B.Sc. Nursing at College of Nursing, AFMC Pune; 180 seats of 3-year training in Diploma in General Nursing & Midwifery course at various Armed Forces Hospitals.

Eligibility : Females who are unmarried or divorcees or legally separated or widows without encumbrances.

Age : 17 to 25 years.

### Career Opportunities

The demand 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, Pharmacy or Old-age Homes. Apart from these jobs there is a scope for private practice.

Career option in this profession is *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 centres, clinics and similar institutions. The current demand for nurses from India to serve 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 licence and preferably some work experience may appear for this examination.

The list of institutions offering different courses in Nursing is given at Annexure-VII, the list of Nursing Councils is given at Annexure-VIII and the list of the Nursing Examination Boards is given at Annexure-IX.

## 9. NUTRITION AND DIETETICS

### Introduction

Nutrition is the science of food and its effect on the physical and mental growth and development of human beings. It involves the study of the basic nutrients required to sustain life, their bioavailability in foods and overall diet and the effect upon them of cooking and storage. It is also concerned with dietary deficiency diseases. Nutritionists and Dietitians are professionals equipped with the knowledge of the chemistry and nutritional value of foods and their preparation. Nutritionists and Dietitians plan nutrition programmes and supervise the preparation and serving of meals. They are often responsible for promoting sound eating habits through education and research. They are concerned with food and health in its widest sense and their work is preventive and therapeutic. They have to know about food production and processing; social, economic, and psychological factors that influence food choice; the digestion, absorption and metabolism of food, its effects on nutritional well being; how to treat diseases and prevent nutrition-related problems.

### Nature of Work

A nutritionist must understand the physical activities, lifestyles and the type of diet being followed currently. It is essential that the nutritionist understands the food likes and dislikes as well as the eating routines and schedules of the individual. Work in this field varies according to the area of specialization. Nutritionists work with both normal people as well as referrals from medical practitioners. Their work has two aspects:— (1) Prevention of illness: In those whose physical characteristics tend towards conditions like obesity, malnutrition or hereditary disorders; (2) Rehabilitation after illness or surgery: Which includes helping patients cope with their new life, and showing them how to maximize the benefits of the treatment. The dietitian, on the other hand, provides guidance on the development of healthy eating habits.

Other important tasks undertaken by the dietitians are: Meal planning, Administration, Counselling, Institutional Food Administration, Therapeutic Nutrition, Clinical Dietetics, Public Health Nutrition and Community Nutrition.

### Traits Required

- Having scientific temper for food-values
- Ability to communicate complex things in layman's language
- Good motivational skills with positive attitude
- Order of professional ethics in dealing with people from all walks of life
- Confidence, patience, humorous in nature

### Education & Training

A Home Science Bachelor's degree course of 3-year duration covers subjects like Child Development, Food & Nutrition, Family Resource Management, Textile & Clothing, Home Science Education & Extension and General Home Science. Under Food Science & Nutrition, one has to study food theory and its processing applications, normal and therapeutic dietetics, community foods and nutrition, analysis of foods, quantity cookery and food preservation.

In the 2-year Master's degree course, specialization is possible in Food Science & Nutrition. In a B.Tech. Food Science course, subjects covered include food science, microbiology, agricultural statistics and calculus, general horticulture, economics and marketing, biochemical engineering, chemical and biochemical engineering technology of fruits & vegetables, pulses & oil, milk, sugar, meat, fish, cereal, nutrition, infestation & control, marketing and administration.

### Courses and Eligibility

There are different ways of evolving as a nutritional expert or dietitian. The first step is to take up a Home Science course right after 10+2 or equivalent. Some universities require 10+2 level with science subjects (this is true where the course is conducted for girls in Agricultural Universities). In the case of the 3-year BHSc. (Bachelor of Home Science) course, Food & Nutrition Science and related aspects are taught as components of the course. There may be provision for specializing (major/honours) in this group of subjects. Another route is to take up a full-time catering diploma after 10+2 or equivalent and add on nutrition specialization as part of further education. A bachelor's degree in Food Science/Food Technology may also lead you to this line of work. There are Nutrition & Dietetics courses for graduates without a prior background or science background.

The next step would be to take up a Master's degree in Home Science, which is a 2-year course and normally the Food & Nutrition option is popular. You can also go for Diploma in Dietetics and Public Health Nutrition (eligibility to this course is B.Sc. in Home Science from a recognized university). You can proceed to do a Ph.D. if you wish to have teaching, education and R & D options. This is also helpful if you want to eventually take up consultancy.

About 70 universities in the country conduct Home Science/Domestic Science/Home Economics courses. Lucknow University, Delhi University, M.S. University of Baroda and SNDT Women's University offer the 3-year BHSc. course. In a few institutions, there is a 5-year BHSc. course for school leavers (after class X). Food Science & Technology/Nutrition can be offered in a B.Sc. course or as a Bachelor's degree in Applied Science as in Delhi University. Again, Food Technology course of a 4-year duration after Plus Two in Science is an option provided that you are keen on going in-depth in the technical, research aspects and wish to handle a totally scientific study. There are post-graduate diplomas in Nutrition & Dietetics that only Home Science/Microbiology/Biochemistry graduates can take up. Some of these courses are also open to students from other streams at some of the hotel management and catering institutes.

The list of the Institutes providing facilities for different courses in the field of Nutrition and Dietetics is given at Annexure-X.

### **Career Opportunities**

Dietitians and Nutritionists work in hospitals, schools, hotels and nursing homes by ensuring proper meals planning, proper cooking modes and product research. Apart from clinical/community practice, dietitians can be involved in teaching in centres of higher learning, in research, in industry and as consultants or freelance for sports nutrition, media and fashion/beauty industry.

Hospitals and nursing homes require full-time dietitians, who advise and plan special diets for patients as part of their medical treatment, e.g. a carefully controlled diet for kidney disease/a diabetic or an appropriately formulated liquid feed which has to be passed through a tube. They work as a team with the other health professionals e.g. physicians,

surgeons, nurses, catering team, etc. and help in managing catering departments in small hospitals or nursing homes. Besides implementing nutrition programmes, they also evaluate and report the results.

In community settings, dietitians may be in old-age homes, residential schools/institutions with catering services, hotels and local authorities, helping to develop and implement food policies, help and promote positive, enjoyable changes in food choice etc. Other places of employment for a dietitian/nutritionist may be food-processing units, food manufacturers and retailers, catering organizations and other industrial units allied to food and nutrition. The services of nutritionists and dietitians in a consultancy role can be utilized in giving advice on nutrition to business and their customers.

Freelance dietitians or consultant dietitians may work either under a contract or have own private practice. They perform nutrition screening for their clients and offer advice on diet-related concerns e.g. weight loss, cholesterol reduction, sugar control, salt-restricted diet etc. Some work as sports nutritionists for sports teams or sports persons.

## 10. ORTHOTICS & PROSTHETIC TECHNOLOGY (OPT)

### Introduction

**Prosthesis** is an artificial replacement or extension of a missing part of the body. **Orthotics** is the medical field concerned with the application and manufacture of orthoses devices, which support or correct the function of a limb, improve function or relieve symptoms of disease. The word is derived from the Greek "ortho" *i.e.* to straighten.

The Prosthetic and Orthotic Science is an allied Health and Technical Process Industry that addresses the segment of disability due to deformity, genetic mutation, spinal cord injury etc. Prosthetic or Orthotic Engineering involves the replacement of missing parts of the body with artificial structures. Providing artificial replacements such as calipers, splints or artificial limbs rehabilitates patients who have lost a limb in an accident or since birth. Today, this branch is well developed and uses the latest technology and materials for preparing artificial limbs. Today improved materials and recent technologies like Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Reverse Engineering and Laser Scanning are enabling many individuals with disabilities to return to activities they previously enjoyed.

### Nature of Work

The work done by Prosthetic and Orthotic (P&O) engineers is both technical as well as imaginative. The job entails a close study of the patient's requirements, an assessment of the muscles involved, flexibility, tone, etc., which is then followed by the preparation of a blueprint, model or cast. Several trials are given on the specific device before it is finalized. The doctor gives the final approval. Materials used may vary but generally wood, leather, plastic, fiberglass, foam etc. are used.

Orthotic & Prosthetic Technologists and Technicians are specialists who design, fabricate and fit the orthopaedic braces (orthoses) and artificial limbs (prostheses) necessary for rehabilitation. Providing orthotic and prosthetic care involves the application of clinical and technical processes to meet patient rehabilitation objectives. The professionals are experts in polymer processes, strength of materials, material science and applied biomechanical principles to develop and totally customize an Orthosis (brace) or prosthesis (artificial limb).

Recent Technology in P&O: CAD/CAM Technology is increasingly being used to help design and fabricate models from which orthoses and prosthetic sockets are produced.

### Traits Required

- Team spirit
- Emotional stability
- Earnest desire to help patients
- Good health
- Patience, cool temperament
- Professionalism in patient care

### Training and Courses

Few National Institutes like National Institute for Orthopaedically Handicapped, BT Road, Boon-Hoogly, Kolkata-700090, The Institute for the Physically Handicapped, Vishnu Digamber Marg, New Delhi-110002, The All India Institute of Physical Medicine and Rehabilitation, Haji Ali Park, Mumbai-400034 etc. offer Diploma, Degree and PG courses for P & O specific programmes. Prominent among the various institutions offering training in Prosthetic and Orthotic Engineering are the National Institute of Rehabilitation Training and Research, Cuttack and The National Institute for the Orthopaedically Handicapped, Kolkata. An admission to these institutes is on the basis of an entrance examination conducted by the Rehabilitation Council of India in New Delhi. These courses are of two years' duration. Diploma courses are also offered at the Department of Rehabilitation at Safdarjung Hospital, New Delhi and the Institute for the Physically Handicapped in New Delhi. Degree courses are available at the Government Medical College, Chennai, Christian Medical College, Vellore and the All India Institute of Physical Medicine and Rehabilitation in Mumbai.

Through these courses students learn the fundamentals of Manufacturing, Materials, Measuring, CAD/CAM, Medical subjects and fitting of appliances. The *Prosthetists/Orthotists* are required to be well trained and educated to analyze the individual needs of each patient and to develop appropriate recommendations. After completion of the course

the *Prosthetists/Orthotists* will be able to work with physicians, therapists and other professionals involved in rehabilitation in a clinical environment. The major Training and Research Centre falls under Ministry of Social Justice and Empowerment, state-owned and aided rehabilitation institute.

Some Institutes of National Importance in P&O Engineering :

S. No.	Institute	Course
1	SV NIRTR, Ministry of Social Justice, Olatpur, P.O. Bairoi, Cuttack-754010	Dip. in P & O, B.P & O Engineering
2	National Institute for Orthopaedically Handicapped, BT Road, Boon-Hoogly, Kolkata-700090	B.P. & O Engineering
3	The Institute for the Physically Handicapped, Vishnu Digamber Marg, New Delhi-110002	B.Sc. (Hons.) P & O
4	The Government Institute of Rehabilitation Medicine, K.K. Nagar, Chennai	Dip. in P & O Engineering
5	The Department of Rehabilitation, Safdarjung Hospital, Ansari Nagar, New Delhi	Dip. in P & O Engineering
6	The All India Institute of Physical Medicine and Rehabilitation, Haji Ali Park, Mumbai-400034	B.P. & O Engineering
7	Central Polytechnic, Taramani, Chennai-600013	Dip. in P & O Engineering

## **Eligibility**

Candidates who have cleared the 10+2 or equivalent examination with a background in science are eligible for the training programme, which is of two to three years' duration. Diploma courses are of two years' duration while degree courses are of three years' duration.

## **Career Opportunities**

P & O is a profession with a variety of exciting employment opportunities available based on their educational and experience background such as :

- O & P Practitioners
- Technicians and Technologists
- Consultants
- Assistants and Fitters.

There are numerous NGOs offering lucrative employment and also there are ample opportunities to work for companies who manufacture Orthoses or Prosthesis fittings and accessories. Nowadays many multinational companies coming up in India to open their modern plants could give good placements.

The list of Institutes providing facilities for different courses in the field of Orthotics & Prosthetic Technology is given at Annexure-XI.

### III. DIFFERENT COURSES RUN BY VARIOUS INSTITUTIONS IN RESPECT OF PARAMEDICAL COURSES

It has been a reality that the eligibility criteria for admission to different courses in Paramedical field may vary from institute to institute. For more details it is advisable to consult the prospects of the Institutions. The brief description of some courses available in different institutions has been made to create awareness in the field.

#### 1. Diploma in Radio Diagnosis (Medical Radiation Technology)

The Diagnostic Radiology Department plays a central role in patient care in any modern hospital. This course imparts training and practical experience in taking X-rays of the human body. Basic training in MRI and CT scanning is also provided, if the Department of Radio Diagnosis and Imaging of any hospital is equipped with all advanced imaging modalities and a full-fledged picture archiving communication system. The radiology images in the hospital are stored and distributed digitally, using computer networks (filmless radiology).

Minimum qualification for application	Pass in +2 examination or its equivalent with English, Physics, Biology or Botany/ Zoology
Age limit	17 years on or before 15 July of year of admission
Entrance test	Science based paper
Course duration	2 years

#### 2. Diploma in Radiotherapy (Medical Radiation Technology)

After the discovery of X-ray and radium, the biological effect of different types of radiation was understood. It was known that radiation could control cancer. The incidence of cancer is increasing. Among various types of treatment used for cancer, today radiotherapy plays an important role. During this course, the students will learn human anatomy and the functions of different organs, cancers of different sites of the body and radiotherapy techniques applied for the treatment of cancers. The students will be taught the underlying physics of X-rays and gamma rays, and the equipment used to produce the above radiation, its uses and methods to protect from the harmful effects of ionizing radiation.

They will understand and apply the radiographic procedures to localise the tumour and will interact closely with cancer patients and learn to care for them.

Students will gain experience in the use of ionizing radiation to treat cancer to control the disease without producing unnecessary side effects.

Minimum qualification for application	Pass in +2 examination or its equivalent with English & Science subjects, including Physics
Age limit	17 years on or before 15 July of year of admission
Entrance test	Science based paper
Course duration	2 years

### 3. Diploma in Anesthesia Technology

The result of the recent advances in critical care medicine encourages doctors to take very sick patients for major surgery. This requires skilled anesthesia and post-operative care. It is now being recognised that anesthesiologists require trained help to handle these procedures. In recognition of this, the Indian Society of Anesthetists plan to implement a "minimum standards for patient care", which means that it will be mandatory for an anesthetist to have a skilled assistant for at least the start and end of every anesthetic procedure. These skilled assistants need to be trained and thus this course is now being offered at some hospitals (ex. C.M.C. Hospital). The course will cover basic Anatomy, Physiology and Pharmacology especially with respect to airway management and relevant medication. An introduction to sterility, management of emergency situations including cardiopulmonary resuscitation and understanding of equipment will be an essential part of the course.

Minimum qualification for application	Pass in +2 examination or its equivalent with English, Physics, Chemistry & Biology
Entrance test	Science based paper
Course duration	2 years, followed by 1-year compulsory internship

#### 4. Diploma for Hand and Leprosy Physiotherapy Technicians

There is an ever-increasing need for specialised care of hands mutilated by injury, crippled by leprosy and neglected after old nerve injuries, infection, stiffness or other paralytic conditions. These require accurate pre & post-operative assessment and devoted aftercare, whether treated by conservative or surgical methods. The need for physiotherapy technicians to become part of the Hand Care Team is a growing demand in the entire country as in the West.

Basic instruction and extensive practical training in physiotherapy techniques of hands and feet will be given. This will be followed by three months of internship after the final examinations. The technicians will be equipped to work in hospitals dealing with diverse hand conditions or leprosy, under the direct supervision of doctors or physiotherapists.

Minimum qualification for application	Pass in +2 examination or its equivalent with English, Physics, Chemistry & Biology
Entrance test	Science based paper
Course duration	2 years, followed by 6-month compulsory internship

#### 5. Diploma in Optometry

There are many branches of Medicine in which technical personnel can greatly help the doctor in caring the patient during medical treatment. An Optometrist, whose assistance is of much value to the ophthalmologist, is trained to measure visual acuity, determine refractive errors, prescribe spectacles and operate various ophthalmic instruments. This course includes theoretical and practical training in all aspects of optometry.

Minimum qualification for application	Pass with 40% in +2 examination or its equivalent with English, Physics, Chemistry & Biology
Entrance test	Science based paper

## 6. Diploma for Critical Care Therapy Technicians (*Formerly known as Respiratory Therapy Technicians*)

The Intensive Care Unit is a place where critically ill patients are admitted and most of them are on respiratory as well as cardiovascular support. The outcome of the care depends on the quality of work, which is carried out by specially trained "Critical Care Team". Critical Care Therapy Technicians are part of the critical care team. They are skilled assistants who look after chest physiotherapy, tracheal suction, inhalation therapy, care of the airway, mechanical ventilation, assisting in all the invasive procedures, monitoring the haemodynamic status round the clock and maintenance of the equipment in ICUs. These skilled assistants need to be trained adequately. This course, aiming the above, is now being offered at the Christian Medical College, Vellore.

The course will cover basic Anatomy, Physiology and Pharmacology with special reference to the respiratory and cardiovascular system. They will have an exposure to diseases of the respiratory system and problems affecting critically ill patients. An introduction to the importance of critical care, sterility, management of emergency situations and basic engineering to understand the equipments is an essential part of the course.

The course is structured to provide plenty of "hands-on" experience.

They will have a rotation through Pulmonary Function Lab, Asthma Clinic, Anaesthesia, Surgical, Neurological, Medical & Paediatric ICUs.

Minimum qualification for application	Pass in +2 examination or its equivalent with English, Physics, Chemistry & Biology
Entrance test	Science based paper
Course duration	2 years, followed by 1-year compulsory internship

## 7. Diploma in Prosthetics & Orthotics

This course gives training in the theoretical background and practical skills involved in the design, fabrication and fitting of prostheses and orthoses (braces, calipers and artificial limbs) and is aimed at producing a professional who will be able to function as a member of the rehabilitation team in a clinical environment. The training is distributed

over four academic semesters and is followed by a six month internship. Examinations will be conducted at the end of each semester, both in theory and practicals.

Minimum qualification for application	Pass in +2 examination or its equivalent with English, Physics & Biology or Mathematics
Entrance test	Science based paper
Course duration	2 years

### 8. Diploma in Hearing, Language & Speech (Speech and Hearing Assistants)

This course is a comprehensive and practical oriented programme intended to train Speech and Hearing Assistants who can take up routine assessment of a variety of speech, language and hearing disorders. At the completion of the course, these assistants will be able to work under the guidance of a fully trained graduate or post-graduate clinician and execute routine clinical services. They would be ideally suited to work at secondary care centres, scheme at schools for spastics, schools for mentally retarded and schools for the deaf.

Admission subject to approval by the Rehabilitation Council of India.

Minimum qualification for application	Hr. Sec. or 10+2 or 12th standard or 2 years PUC or its equivalent with Physics, Chemistry, Biology or Mathematics. Working knowledge of English, Proficiency in regional languages
Entrance test	Common paper (non-science) at Vellore

### 9. PG Diploma in Nuclear Medicine (Medical Radiation Technology)

Nuclear Medicine Technology is the medical speciality concerned with the use of small amounts of radioactive material for diagnosis of various diseases and also for treatment of some of them. Nuclear Medicine Technologists (NMTs) apply the art and skill of diagnostic imaging and treatment through the safe and effective use of radionuclides. Under the supervision of a physician, the NMT participates in the daily operation of the nuclear medicine department. The field of nuclear medicine

technology has grown significantly over the past few years. Some of the primary responsibilities for Nuclear Medical Technologists (NMTs) include preparation of radio pharmaceuticals, working directly with patients throughout the procedure and working with sophisticated instrumentation and computers to generate digital images.

Minimum qualification for application	Pass in B.Sc. examination or its equivalent with English & Physics as main or ancillary subjects
Entrance test	Science based paper
Course duration	2 years

### 10. PG Diploma in Histopathological Laboratory Technology

This is a one-year course intended to train students in processing tissues and staining of sections for microscopic examination, autopsy techniques and preservation and mounting of specimens for display in pathology museums. They will also be trained in cytological methods, which are widely used in the early detection of cancer in pathology laboratories and cancer hospitals.

Minimum qualification for application	Pass with 50% marks in B.Sc. MLT or B.Sc. with Biology or Botany/Zoology or Biochemistry or Microbiology as main subject or B.Sc. Physics or Chemistry as main with Botany or Zoology as ancillary
Student intake	2 per year
Entrance test	Science based paper
Course duration	1 year

### 11. PG Diploma in Dialysis Therapy

The course is intended to give training in the various techniques of Haemodialysis and Peritoneal Dialysis, Continuous Ambulatory Peritoneal Dialysis (CAPD), Continuous Renal Replacement Therapy (CRRT), MARS Therapy (Liver Dialysis) to meet the rising need for trained personnel to work in the field of dialysis technology. These dialysis therapists are trained to operate different types of dialysis machines, trouble shooting, disinfection and maintenance. The course offers training for the water treatment plant (Reverse Osmosis Process) to get treated water for the purpose of Haemodialysis.

Minimum qualification for application	B.Sc. with English and main subjects Physics or Chemistry or Zoology or Botany or Biology
Entrance test	Science based paper
Course duration	1 year, following successful completion of the course, 1-year internship is required

## 12. PG Diploma in Medical Microbiology

This course is intended to give training in the identification of microbes causing disease in man. At present there is a lack of this facility in many hospitals. The course offers training in the isolation and identification of bacterial and fungal agents causing disease in man with a brief exposure to diagnostic methods for viral and parasitic agents. The study includes detection of microbes by morphology, culture, biochemical and other features. Besides identifying them, the organisms are subjected to antimicrobial susceptibility test, which reveals what drug or combination of drugs are the best to be used in that patient. Besides helping to diagnose infectious diseases by organism isolation, diagnosis is also made by various serological tests to detect antibodies against the infectious agents. Training in common serological tests thus forms part of the course. Training in cleaning and sterilization of glassware and other materials needed, preparation of various types of media and reagents to carry out the diagnostic bacteriological and serological procedures will also be given in the course. Organised lectures, practicals and demonstration as well as supervised bench training will be offered during the course.

Minimum qualification for application	B.Sc. with English and Biology (Botany/ Zoology) as main subjects. For those with Chemistry as the main subject, Botany or Zoology should have been ancillary subjects. B.Sc. Home Science, B.Sc. MLT, B.Sc. Microbiology as main or ancillary subject from a recognised university with first or second class with a minimum 50% aggregate
Entrance test	Science based paper
Course duration	1 year, following successful completion of the course, a 6-month internship is required

### 13. PG Diploma in Medical Virology

This course will provide science graduates with previous training in Medical Microbiology or Medical Laboratory Technology, with specialised training in Medical Virology. The course will help, train and instruct individuals in handling animal cell cultures, cultivation and identification of viruses, serological tests for viral infections and basic molecular diagnostics, with special reference to important agents prevalent in our country. The successful candidate at the end of the course will be in a position to independently handle clinical samples for virus isolation and identification and to carry out a variety of serodiagnostic tests. The candidate will have an orientation in molecular diagnosis. Such candidates will be able to find employment with organised or private health care facilities as well as in quality control laboratories of biomedical product manufacturers.

Minimum qualification for application	B.Sc. MLT, or B.Sc. + Diploma in Medical Microbiology or B.Sc. + Dip. in Clin. Lab. Technology or B.Sc. Microbiology
Entrance test	Science based paper
Course duration	1 year

### 14. PG Diploma in Cardiac Technology

This course is intended to give training in Electro-cardiography, Treadmill, Holter and Catheterisation laboratory.

Minimum qualification for application	B.Sc. degree with English and as main subject Physics or Chemistry or Zoology or Botany or Biology (not Microbiology)
Entrance test	Science based paper
Course duration	2 years plus 1-year internship

### 15. PG Diploma in Neuro-Electrophysiology

This is a two-year course for graduates with science subjects (see minimum qualification below). Electrophysiology is a very important component of diagnostic neurology. It involves recording electrical activity from the central and peripheral nervous system after providing

different forms of stimuli to the patient. Some of the diagnostic tests done are Electroencephalography (EEG), Electromyography (EMG), Evoked Potentials (EVP) etc. With these diagnostic tests, clinicians will be able to arrive at a diagnosis of various neurological conditions.

Minimum qualification for application	B.Sc. degree with English and as main subject Physics or Chemistry or Zoology or Botany or Biology or Electronics or Computer Science (not Microbiology)
Entrance test	Science based paper
Course duration	2 years

### 16. PG Diploma in Perfusion Technology

This course is intended to give training in Cardiopulmonary bypass (Heart-Lung Machine) techniques. This would involve some knowledge of Anatomy, Physiology and Physics. These technicians would also have training in monitoring techniques which are essential for perfusion. A working knowledge of respirators and allied apparatus will also be provided.

Minimum qualification for application	B.Sc. degree with English and Physics or Chemistry or Biology as main subject
Entrance test	Science based paper
Course duration	2 years, followed by 1 year of compulsory internship

### 17. PG Diploma in Advanced Respiratory Therapy

Respiratory therapists play a useful role in Respiratory Medicine Units. They enhance the quality of the clinical work in the outpatients' area, the Respiratory Medicine Wards, the Pulmonary Function Lab, the Sleep Lab and the Bronchoscopy Suite. Respiratory Therapists help the doctors in the management of patients with respiratory diseases. They will be taught to identify common respiratory diseases on the basis of symptoms and clinical signs. They would have the skills to supervise and help the patients with problems relating to the use of various inhaler devices and various respiratory therapy procedures. They would help in the management of chronic diseases such as Asthma, Emphysema,

Bronchiectasis, Interstitial lung disease, Sleep apnoea. They would have the ability to work with respiratory equipments such as oxygen concentrator, mechanical ventilator, pulse oximeter and cardiac monitor. Part of their training would be in the Intensive Care Unit (ICU) where they would learn to help in the management of patients on ventilators. They would be conversant with all kinds of basic lung function testing including Spirometry, Lung volumes, Diffusing capacity, Body Plethysmography, Bronchoprovocation testing, Cardio-Pulmonary exercise testing and Allergen skin testing. They would therefore have the skills to work as therapists to help Respiratory and General Physicians manage respiratory patients and as technicians in the Pulmonary Function Labs, ICUs and Respiratory wards.

Minimum qualification for application	B.Sc. with Physics, Chemistry, Biology, Botany, Zoology, Microbiology or Biochemistry as main subject
Entrance test	Science based paper
Course duration	2 years, followed by 1 year of compulsory internship.

### 18. PG Diploma in Cytogenetics

Cytogenetics is the study of chromosomes, and is a relatively new, rapidly expanding, exciting field. Abnormalities of chromosomes may be seen in patients with mental retardation, delayed or abnormal development, disordered sexual development, infertility and recurrent abortions. Chromosomal changes are also seen in many cancers, and chromosomal analysis is helpful in making an accurate diagnosis and/or to predict outcome. Students will learn how to culture cells from blood, bone marrow, chorionic villus, amniotic fluid and tumours and harvest (extract their chromosomes) and study them. They will also be exposed to basic molecular techniques. A fully trained student will be able to handle cell cultures, including preparation of media and other necessary reagents, use and maintain laboratory equipment, identify chromosomes and make diagnoses of common conditions.

Successful candidates will be able to find jobs in any cytogenetics/cell culture laboratory or in a molecular genetics laboratory.

Minimum qualification for application	B.Sc. with I class in Physics, Chemistry, Botany, Zoology, Biochemistry, Microbiology, Biotechnology or Medical Laboratory Technology. Ability to handle English as a medium of learning
Student intake	2 per year
Entrance test	Science based paper
Course duration	2 years

### 19. PG Diploma in Community Health Management (PGDCHM)

The PGDCHM is a one-year, practical-oriented training course, aimed at developing persons interested/involved in managing community health and developing projects. The core subjects are Applied Sociology, Health & Nutrition, Personal Growth & Development, Social Research Method, Participatory Planning & Management, Community Management and Organisational Development. In addition there is an elective and practicum providing an opportunity for effective self directed learning for improving one's own personality and bringing about planned change in the community. A wide variety of training methodologies including group-work, discussions, field-visits, exercises, games, video, lecture, placement (own cost) etc. make the course interesting and enjoyable. This course provides a relevant and conducive environment for learning about community development. Those who have completed this course in the past are well placed in different levels of management in NGO, Government and National/International Funding Agencies.

On completion of this course, candidates will have the relevant knowledge, skills and attitude to :

Plan, organise, implement and evaluate Community Health and Development programmes.

Plan and carryout a survey using quantitative and qualitative methods.

Use skills and techniques of management to ensure efficient and effective use of resources.

Take leadership in working with team members and community representatives in planning detailed activities required to accomplish health & development goals and objectives.

Develop an interest to serve the vulnerable sections of society and take initiative to equip oneself through self-directed learning.

Determine and provide for the Human Resource Development of the personnel required for the programme.

Develop a desire to improve one's own personality to function more efficiently as a change agent in the community.

Minimum qualification for application	Bachelor's degree or a direct Master's in any discipline from any recognised university. Ability to handle English as a medium of learning
Course duration	1 year

## 20. PG Diploma in Hospital Administration (PGDHA)

The art and science of administration has developed rapidly in the last two decades and is now accepted as a specific discipline. Initially applied in industrial settings, this is now being increasingly applied to hospitals and other health care operations. Modern hospitals encompass varied and complex disciplines of medical care. Hospital administration today is therefore a challenge to its team of multi-disciplinary personnel in efficiently co-ordinating their efforts. Many of our hospitals are much more than just places of healing for the sick and must function as an educational institution, a research laboratory and a training ground. These objectives impose further demands on the managerial skills of those entrusted with administrative responsibilities, including financial control and optimal usage of resources. The Hospital Administration programme is designed to train suitable candidates for administrative work in hospitals.

Minimum qualification for application	Graduates, preferably with one year's working experience in a hospital. Preference will be given to those who are from mission hospitals and have assurance of a job on their return. A good working knowledge of English is necessary
Course duration	1 year

## 21. PG Diploma in Health Economics, Policy & Financial Management (HEPFM)

This course is offered for Medical college faculty interested in finance management, Accountants/Superintendents/Health administrators of hospitals and other health care students having interest in health economics, economic researchers (students, teachers or research scholars) and aims :

To introduce the basic conceptual tools and theoretical aspects of health economics and to apply them in day-to-day health care operations. Apply health economics as a tool for policy analysis and make cost effective, scientific and evidence based choices in health care.

To use tools of health economics for financial governance in the private NGO and public sectors.

To equip health professionals to the changing needs of health care management involving the economics of health care insurance.

Minimum qualification for application	Bachelor's degree or a direct Master's in any discipline from any recognised university. Ability to handle English as a medium of learning
Course duration	1 year

## 22. PG Diploma in Clinical Counselling

This is a one-year apprentice type training for post-graduates in life sciences (see minimum qualification below). Counselling is a very important component of clinical care. It involves an inherent understanding of social, psychological and medical factors being faced by patients in their pathway to healing. The course is full time and involves active patient care in a supervised and supported milieu. Though the candidate is expected to take some responsibility as a member of the team in one of the psychiatry units while in training, they will also be exposed to the various liaison services in health care. After training, the candidate is expected to have some skill and experience in counselling patients who come to a hospital or health clinic for different physical and emotional disorders.

Minimum qualification for application	MSc/MA/MSW degree in Psychology or Social Work with a good working knowledge of English
Course duration	1 year

### 23. Bachelor of Medical Record Science (BMRSc)

In this course (BMRSc) students are trained in all aspects of Medical Records functioning through theory classes, postings in different areas, projects and seminars. Foundation courses in Anatomy, Physiology and Biochemistry help them to understand the functioning of the human body and to use this information in the management of charts. With the increasing computerisation of medical records, students are provided an opportunity to learn about the application of computer methods in hospital record keeping.

Minimum qualification for application	Pass in a Bachelor's degree examination (Arts, Science or Commerce) from any recognised university
Course duration	2 years

### 24. Diploma in Dental Assistance

The Diploma in Dental Assistance aims at training personnel to work in dental clinics. Besides developing skill at chair-side assistance, knowledge in asepsis and sterilization, proficiency in laboratory procedures and competence in oral radiographic techniques, the programme also equips the trainees to handle other aspects of practice management, like reception and public relations, maintenance of records and accounts, management of stores and supplies, and care of instruments and equipment.

Minimum qualification for application	Diploma in Dental Hygiene with State Recognition after pass in +2 examination
Course duration	1 year (plus 1 year internship)

### 25. Diploma in Hospital Equipment Maintenance

The advancement of health care can to a very significant extent be attributed to the advancement of technology in diagnosis and treatment of diseases. To attain the above goal, most hospitals have now purchased new equipment. To maintain both new and old equipment, Engineering Supervisors are required. The objective of this course is to train a cadre of Engineering Supervisors to cater to the needs of hospitals and health care establishments. Candidates admitted to the above course will be taught to repair and maintain mechanical, electrical and electronic equipment.

Minimum qualification for application	Diploma in Engineering (Mechanical, Electrical or Electronics)
Course duration	1 year, followed by 6 months compulsory internship

### 26. Diploma in Hospital Pharmacy Practice

This course is intended to provide didactic lectures and extensive practical training in a hospital atmosphere, where the students are exposed to practical aspects of dispensing drugs to in-patients and out-patients, pharmacy store management procedure, developing communication skills etc. After completion of this course, candidates would develop confidence to work in any hospital independently. This training will give additional weightage for job opportunities in hospitals.

Minimum qualification for application	Candidates who have completed 2-year Diploma in Pharmacy (E.R. 1991) including 500 hours of internship/practical training from institutions approved by Pharmacy Council of India
Course duration	1 year

### 27. PG Diploma in Clinical Pharmacy

With the rapid evolution and frequent introduction of new drugs into the market, the ever changing formulations, the various dosage forms, and the advanced pharmaceutical technologies, the hospital pharmacist is challenged to keep pace with these advances and be involved clinically for optimising the clinical efficacy of drugs. The pharmacy graduates in India are trained academically only in class rooms and laboratories and

internship is mostly in industries without any exposure to hospital environment. This course gives them an opportunity to interact with the health care team and to develop skills to monitor prescriptions, to minimise adverse effects and to maximise therapeutic effects of drugs. Training will also help to improve drug information and compliance in medication.

Minimum qualification for application	Candidates, who have completed Bachelor's Degree in Pharmacy from any recognised university, preferably with I class
Course duration	1 year (9 months of academic sessions and 3 months of internship. There will be two written examinations, practical assessments including viva and submission of a project dissertation)

## 28. Diploma in Trichology

Trichology is a scientific study of hair and scalp disorders which include hair thinning, male and female pattern baldness, seborrhea dermatitis, scalp eczema and psoriasis, scalp itching and premature graying.

Trichology deals with hair, its anatomy, growth and diseases, thus involves in-depth study of Chemistry, Biology, Anatomy and Physiology. With the popularization of Paramedical Sciences, this field has gained much importance in the recent years.

Both Diploma and Degree courses are available in this field.

Diploma in Trichology is a three months duration course and is open to Paramedics, Pharma graduates, Science graduates, Clinical researchers, Nurses, R&D professionals, Beauticians and Hair stylists. A six-month programme leading to an International Degree Certification in Trichology can be taken by medical doctors only.

These courses can be undertaken by correspondence (Distance Learning) through The International Association of Trichologists (I.A.T), Sydney and I.A.T., Adelaide. Indian residents can undertake these courses at the MET-Richfeel Institute of Trichology, Mumbai Educational Trust, Bandra West, Mumbai. (<http://www.met.edu>)

Diploma in Advanced Hair Sciences can be done from Institute of Cosmetic and Laser Surgery Center, Borivali (W), Mumbai. (<http://icls.in>)

**ANNEXURE-I**

**List of Institutes offering Diploma in Medical Laboratory Technology**

B.J. Medical College, Pune Station Road, Pune - 411001, (Maharashtra)	Bankura Sammilani Medical College, Bankura, (West Bengal)
Dr. V. M. Medical College, Solapur - 413003, (Maharashtra)	Goa Pharmacy College, Panaji -403001, Goa
Govt. Medical College, Miraj - 416410, (Maharashtra)	Holy Family Hospital, Jamia Nagar P.O, New Delhi - 110025
J.D. School of Nursing, (Andhra Pradesh) 476, Rotary Nagar-3, Tekkali, Srikakulam District, Andhra Pradesh	Jadavpur University, Kolkata, (West Bengal)
Jaipur Golden Hospital, 2, Institutional Area, Sector 3, Rohini, New Delhi - 110085	King Institute of Preventive Medicine, Guindy, Chennai - 600032, (Tamil Nadu)
Krupanidhi College of Pharmacy, 5, Sarjapur Road, Koramangala, Bangalore - 560034, (Karnataka)	Majeedia Hospital, Lamia Hamdard, Hamdard Nagar, New Delhi - 110062
Medical College, Aurangabad - 431 001, (Maharashtra)	Medical College, Nagpur - 440003, (Maharashtra)

**List of Institutes offering Bachelor of Medical Laboratory Technology**

Padmashree Institute of Medical Laboratory Technology, Bangalore, (Karnataka) Nagarbhavi Circle, Bangalore, Karnataka	Acharya Institute of Health Science College of Medical Laboratory Technology, 51, Opp. CIL Layout, Cholanagar, R.T. Nagar Post, Bangalore - 32
Adichunchanagari College of Medical Laboratory Technology, (Karnataka) A H & R C Campus, BG Nagar, Bellur - 571 448	All India Institute of Medical Sciences, Ansari Nagar, New Delhi - 110029

Alva's College of Medical Laboratory Technology, Near New Bus Stand, Alva's Health Centre Complex, Moodbidri, Dakshina Kannada - 574227	Christian Medical College, Thorapudi P.O, Vellore - 632002, (Tamil Nadu)
City College of MLT, City Enclave, Shaktinagar, Mangalore - 16, Karnataka	CMR Jnanadhara College of MLT, 2nd Main, 3rd Block, HBR Layout, Kalyan Nagar, Bangalore - 560084
College of Allied Health Sciences, Manipal Academy of Higher Education, Manipal - 576119 (Karnataka)	Dr. M.V. Shetty Institute of Health Science, A.B. Shetty Circle, Mangalore - 575001
Dr. B.R. Ambedkar Medical College Hospital, Kadugondanhalli, Bangalore - 560045	FR. Muller's Institute of Medical Education and Research, Kankanady, Mangalore - 575002
Jawaharlal Institute of Post Graduate Medical Education and Research, Dhanvantari Nagar, Pondicherry - 605006	Kasturba Medical College, Manipal - 576119

ANNEXURE - II

List of Institutes offering Bachelor of Physiotherapy

Adiparasakthi College of Physiotherapy and Paramedical Sciences, Melmaruvathur, Tamil Nadu.	Aligarh Muslim University, Jawaharlal Nehru Medical College, Department of Orthopaedic Surgery, P.O. Box No. 52, Aligarh University-202002.
All India Institute of Physical Medicine and Rehabilitation, Haji Ali Park, K. Khadya Marg, Mahalaxmi, Mumbai - 400034.	Alva's College of Physiotherapy, Moodbidri - 574227.
Amar Jyoti Institute of Physiotherapy, Karkardooma, Vikas Marg, Delhi - 110092.	Apollo College of Physiotherapy (Sponsored by Apollo Hospitals Educational Research Foundation), Apollo Hospitals Campus, Jubilee Hills, Hyderabad - 500033.
B.S. College of Physiotherapy, 114, Old Mahabalipuram Road, Chennai - 600096.	Bidar Vidya Kendar (R), Shanthiniketan Educational Campus, Chidri Bidar, Karnataka.
Chennai Medical College, Chennai - 600003.	Cheran College of Physiotherapy, Coimbatore - 641005.
Christian Medical College, Vellore - 632002, (Tamil Nadu).	City Hospital Charitable Trust's College of Physiotherapy, Pound Varden, Kadri, Mangalore - 575003, Karnataka.
All India Institute of Medical Sciences, Ansari Nagar, New Delhi - 110029.	All India Institute of Speech and Hearing, Manasgangotri, Mysore - 570006.
Dr. M.V. Shetty Institute of Health Science, M.V. Shetty Circle, Mangalore - 575001.	Post Graduate Institute of Medical Education and Research, Sector 12, Chandigarh - 160012.
Institute of Physically Handicapped, Digamber Vishnu Marg, New Delhi.	

## ANNEXURE-III

## List of Institutes offering Ophthalmic Assistant Diploma Courses

Andhra Medical College, Vishakhapatnam - 530002, Andhra Pradesh.	Assam Medical College, Dibrugarh - 786002, District Dibrugarh, Assam.
B.R.D. Medical College, Gorakhpur - 226003 (Uttar Pradesh).	Bankura Sammilani Medical College, Bankura, (West Bengal).
Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi - 110029.	Gandhi Medical College, Bhopal - 462001, (Madhya Pradesh).
G.R. Medical College, Gwalior - 474009 (Madhya Pradesh).	Govt. Medical College, Patiala - 147001(Punjab).
Indira Gandhi Medical College, Shimla - 171001 (Himachal Pradesh).	Kakatiya Medical College, Warangal - 506007 (Andhra Pradesh).
Karnataka Medical College, Hubli - 580022 (Karnataka).	Kurnool Medical College, Kurnool - 518002 (Andhra Pradesh).
M & J Institute of Ophthalmology, Civil Hospital Campus, Ahmedabad - 16 (Gujarat).	M.L.B. Medical College, Jhansi - 284002 (Uttar Pradesh).

## ANNEXURE-IV

### List of Institutes offering Medical Transcription

Academy of Medical Transcription, C-5/32, Safdarjung Development Area, Opp. IIT Main Gate, New Delhi - 110016.

Bajaj Institute of Information Technology (BIIT), Unit No. 1, 1st Floor, C-4E, Market Janak Puri, New Delhi - 110058.

Indian Institute of Medical Transcription (IIMT), H-15, South Extn. Part-I, New Delhi - 110049.

Karltech Medical Transcription Pvt. Ltd., (An Indo-American Joint Venture), 344, Block II, Ganga Shopping Complex, Sector 29, Noida.

KITCO, 4, Amrit Nagar, South Extn. 1, New Delhi - 110003.

MDS Infotech Ltd., (A Member of American Association for Medical Transcription), B-219, Saraswati Vihar, Pitampura, Delhi - 110034.

Medical Transcription Education Center, (An Education Unit of Ancient Global Solutions), H.O. 245-B (3rd Floor), Main Road, Sant Nagar, East of Kailash, New Delhi - 110065.

Meditransindia (MTI), 29/1, Ashok Nagar, Jail Road, Tilak Nagar Circle, New Delhi - 110018.

Shivam Institute of Medical Transcription (SIMT), D-53, Okhla Industrial Area, Phase-I, New Delhi - 110020.

**ANNEXURE - V**

**List of Recognized/Approved Institutions, which are conducting  
Dental Mechanical and Dental Hygienist Courses in India**

Govt. Dental College & Hospital, 1, P. D'mello Road, Fort, Mumbai - 400001	Dental College & Hospital, K.G.'s Medical College, Lucknow - 226003.
Punjab Govt. Dental College & Hospital, Amritsar - 143001, Punjab	Tamil Nadu Govt. Dental College & Hospital, Opp. Fort Railway Station, Chennai - 600003, Tamil Nadu
Govt. Dental College, Fort, Bangalore - 580002, (Karnataka)	Dental Wing, Medical College, Thiruvananthapuram - 635001, Kerala
Govt. Dental College & Hospital, Afzalganj, Hyderabad - 500012, Andhra Pradesh	Patna Dental College & Hospital, Ashok Raj Path, P.O. Bankipur, Patna - 800004 (Bihar)
Govt. Dental College & Hospital New Civil Hospital Compound, Asarwa, Ahmedabad - 380016, Gujarat	College of Dental Surgery Kasturba Medical College, Manipal - 576119, Karnataka
Bapuji Dental College & Hospital, Davangere - 577004, Karnataka	Dental College, Medical College P.O., Calicut - 637008 (Kerala)
Goa Dental College & Hospital, Rajiv Gandhi Complex, Bambolim - 403006 (Goa)	Govt. Dental College, SMHS Hospital Premises, Srinagar (Jammu & Kashmir)
Vinayaka Mission's Sankaracharyar Dental College, 44, Second Agraharam, Salem - 636001 (Tamil Nadu)	Dental Wing, S.C.B. Medical College, Cuttack - 753007 (Orissa)
Ragas Dental College, 116, Dr. Radhakrishnan Salai, Chennai - 600004 (Tamil Nadu)	Institute of Medical Sciences, Banaras Hindu University, Varanasi - 221005 (U.P.)

Indira Gandhi Medical College, Shimla - 171001	Deptt. of Dental Surgery, J.N. Medical College, Aligarh Muslim University, Aligarh (U.P.)
Sree Balaji Dental College & Hospital, Velacheri Main Road, Balaji Nagar, Narayanpuram, Chennai - 601301, (Tamil Nadu)	Saveetha Dental College & Hospital, No. 112, Poonamallee High Road, Velappanchavadi, Chennai - 600077 (Tamil Nadu)
Budha Institute of Dental Sciences, Patrakarnagar, Kankarbagh, Patna - 800020 (Bihar)	D. A. V. Centenary Dental College, Model Town, Yamuna Nagar - 135001 (Haryana)
SDM College of Dental Sciences, Dhavalgiri, Satur, Dharwad - 580002 (Karnataka)	Meenakshi Ammal Dental College & Hospital, Alapakkam Road, Maduravoyal, Chennai - 602102 (Tamil Nadu)
KLE Society's Dental College, Jawaharlal Nehru Medical College Campus, Nehru Nagar, Belgaum - 590010 (Karnataka)	College of Dental Sciences, Davangere - 577004 (Karnataka )

## ANNEXURE - VI

### 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, Annamalai University, Annamalainagar - 608 002.
9. SNDT 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, Rabindranath Tagore Marg, Nagpur - 440 001.
17. University College of Pharmaceutical Sciences, Kakatiya University, Warangal.
18. Bihar College of Pharmacy, Beli Road, Patna.
19. Birla Institute of Technology, Mesra, Ranchi - 835 215.

## ANNEXURE - VII

## List of Institutions offering different Courses in Nursing

<i>Sl. No.</i>	<i>Name &amp; Address of the College</i>	<i>Course</i>	<i>Duration</i>	<i>Educational Qualifications</i>
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.
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 or Indian School Certificate Examination or its equivalent with English Core/Elective Physics, Chemistry & Biology with at least 50% (45% for S.C./S.T.).
4	Post-Graduate Institute of Medical Education & Research, Chandigarh, National Institute of Nursing Education	1. B.Sc. Nursing	4 years	10+2 with Physics, Chemistry, Biology & English or any other equivalent Examination recognized by Punjab University.

<i>Sl. No.</i>	<i>Name &amp; Address of the College</i>	<i>Course</i>	<i>Duration</i>	<i>Educational Qualifications</i>
		2. B.Sc. Nursing (Post-Basic)	2 years	(1) 10+2 or any other equivalent examination recognised by Punjab University. (2) 3 years' experience in bedside Nursing/Public Health Nursing from a Hospital recognized by the State Govt./Govt. of Punjab.
		3. M.Sc. Nursing Specialization (i) Medical Surgical (ii) Community Health	2 years	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	
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.

<i>Sl. No.</i>	<i>Name &amp; Address of the College</i>	<i>Course</i>	<i>Duration</i>	<i>Educational Qualifications</i>
7	Hindu Rao Hospital, New Delhi	General Nursing & Midwifery	3 years	10+2 with minimum 50%.
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		
11	Safdarjung Hospital, New Delhi	General Nursing & Midwifery		10+2 with 50%.
12	Annamalai University, Annamalai Nagar, Tamil Nadu	B.Sc. (Nursing)		An aggregate of 50% marks in Science subjects, Biology or Botany & Zoology, Physics, Chemistry in the examination of High School Certificate/any examination accepted by Annamalai University. 40% in case of SC/ST.

<i>Sl. No.</i>	<i>Name &amp; Address of the College</i>	<i>Course</i>	<i>Duration</i>	<i>Educational Qualifications</i>
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 possess '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 Speciality of Psychiatric Nursing with minimum 55% marks. 2. M.Sc. in Psychiatric Nursing
14	Raj Kumari Amrit Kaur College of Nursing, Lajpat Nagar, New Delhi-110 024	Master of Nursing	2 years	B.Sc. (H) Nursing Examination (10+4 years of the University of Delhi). 2 years' experience in Nursing in Hospital/ Speciality Institute/ Educational Institute/ Public Health Agency.

## List of Nursing Councils

<b>Registrar,</b> Andhra Pradesh Nurses, Midwives, A.N.M. & Health Visitor Council, Sulthan Bazar, Hyderabad (AP.)	<b>Registrar,</b> Assam Nurses Midwives & Health Visitor Council, Hengrabari, Guwahati - 781 006
<b>Registrar,</b> Bihar Nurses Registration Council, Vikas Bhawan, New Secretariat, Bailey Road, Patna - 15, Bihar	<b>Registrar,</b> Chattisgarh Nursing Council, Old Nurses Hostel, Dte. of Health Services, Mantralaya Parisar, Raipur, Chattisgarh
<b>Registrar</b> Delhi Nursing Council LNJP Hospital, Nurses Hostel Ahilya Bai College of Nursing Building, New Delhi-110 002	<b>Registrar,</b> Gujarat Nursing Council, State Council's House in front of Mani Ben Government Ayurvedic Hospital, Civil Hospital Campus, P.B. No. 2021, Ahmedabad - 380 016 (Gujarat)
<b>Registrar,</b> Haryana Nurses Registration Council, SCA No. 03, Sector 20-D, Near Labour Chowk, Dakshini Marg, Chandigarh - 160 020	<b>Registrar-cum-ADGH (Nsg)-cum- President,</b> Himachal Pradesh Nurses Registration Council, Block No.18-B, S.D.A. Complex, Health Directorate, Kasumpti, Shimla - 171 009 (H.P.)
<b>Registrar,</b> Jharkhand Nurses Registration Council, G.N.M. Nurses Hostel, Rajendra Medical Institute, Ranchi Jharkhand	<b>Registrar,</b> Kerala Nurses & Midwives Council, Red Cross Road, Thiruvananthapuram, Kerala
<b>Registrar,</b> Karnataka State Nursing Council, Ananda Rao Circle, Beside Movie Land Film Talkies, Surya Apptt. 15th Floor, Bangalore - 9, Karnataka	<b>Registrar,</b> Mahakoshal Nurses Registration Council, M- 78, Block No. 9, Harshwardhan Nagar, Bhopal-3, Madhya Pradesh

<p><b>Registrar,</b> Maharashtra Nursing Council, E.S.I.S. Hospital Compound, Nurses Hostel, II Floor, Mulund (W), Mumbai - 400 080</p>	<p><b>Registrar,</b> Mizoram Nursing Council, Dwarpui, Aizwal, Mizoram</p>
<p><b>Secretary - cum - Treasurer,</b> Directorate of Health Services, Meghalaya Nursing Council, Lower Lachumire, Shillong - 793 001</p>	<p><b>Registrar,</b> Punjab Nurses Registration Council, SCF No. 47, Phase -10, Mohali, Punjab</p>
<p><b>Registrar</b> Rajasthan Nursing Council, D-35, Jagan Path, Chomu House, C Scheme, Jaipur-302 001 (Rajasthan)</p>	<p><b>Registrar,</b> Tamil Nadu Nurses &amp; Midwives Council, 140, Santhome High Road, Mylapore, (Near Santhome Church) Chennai- 600 004 (TN)</p>
<p><b>Registrar,</b> Tripura Nursing Council, Health Directorate Building, Pt. Nehru Complex, Agartala (Tripura)</p>	<p><b>Registrar,</b> Uttar Pradesh Nurses &amp; Midwives Council, 5 - Servapalli, Mall Avenue Road, Lucknow - 226 001 (UP)</p>
<p>Director General of Health Services, Health &amp; F.W. Development Directorate, Chandra Nagar, Dehradun</p>	<p><b>Registrar,</b> West Bengal Nursing Council, 8, Lyons Range, 4th Floor, Kolkata- 700 001 (West Bengal)</p>

**ANNEXURE - IX****List of Examination Boards (Nursing)**

<b>Addl. D.G.M.N.S., Raksha Mantralaya, Karyalaya Maha Nideshak, Sashastra Sena Chikitsa Sewa, 'L' Block, Hutments, New Delhi - 110 001</b>	<b>Secretary - Treasurer, The Mid - India Board of Examiners of The Nurses League of the CMAI Mure Memorial Hospital, Amravati Road, P.B. No. 96, Sitabuldi, P.O., Nagpur</b>
<b>Secretary, The Board of Nursing Education, C.M.A.I. South India Branch, 3rd Floor, P.B. No.186, HVS Court, 21, Cunningham Road, Bangalore - 560 052</b>	<b>Secretary, Examination Board appointed, Govt. of Tamil Nadu, Dte. of Medical Education, Chennai</b>
<b>Mr. M.Y. Chalawadi, Secretary, Karnataka State Diploma in Nursing Examination Board, Master Plan Building, Victoria Hospital, Bangalore -560 002</b>	<b>Director, BEGNM, Chairman, Director of Medical Education, Govt. of Andhra Pradesh, Sultan Bazar, Hyderabad</b>

## ANNEXURE-X

**List of Institutes providing facilities for different Courses  
in the field of Nutrition and Dietetics**

<i>Course</i>	<i>Institution</i>	<i>Eligibility</i>
M.Sc. Food Science & Nutrition	University of Mysore, Mysore, Karnataka	B.Sc.
M.Sc. in Food Tech. B.Sc. Mgt. in Food Services	Mangalore University, University Campus, Mangalagangothri, Karnataka	B.Sc.
M.Sc. Home Mgt. & Child Dev.	Devi Ahilya Vishwavidyalaya, Ravindranath Tagore Marg, Indore, MP	B.Sc. (Home Sc.)
Diploma in Nutrition & Dietetics and Applied Nutrition	University of Bombay, MG Road, Mumbai, Maharashtra	B.Sc. (Home Sc./ Chem./Microbio.)
Diploma in Nutrition & Dietetics and Applied Nutrition	SNDT Women's University, Nathibai Thackersey Road, Mumbai, Maharashtra	B.Sc. (Home Sc./ Chem./Microbio.)
M.Sc. Food and Nutrition Home Mgt.	Nagpur University, Rabindranath Tagore Marg, Nagpur, Maharashtra	B.Sc.
B.Sc. in Food Tech. B.Sc. Health and Nutrition	Manipur University, Canchipur, Imphal, Manipur	10+2
B.Sc. with Applied Nutrition	Osmania University, Administrative Building, Hyderabad, AP	10+2
M.Sc. Food Sciences and Nutrition	Smt. Padmavati Vishwavidyalayam, Tirupati, AP	B.Sc.

<i>Course</i>	<i>Institution</i>	<i>Eligibility</i>
M.Sc. Community Health and Nutrition	Smt. Padmavati Vishwavidyalayam, Tirupati, AP	B.Sc.
M.Sc. with Applied Nutrition	University of Health Services, Vijayawada, AP	B.Sc.
M.Sc. in Applied Nutrition	University of Health, Vijayawada, AP	MBBS/Graduate teachers of Biochem., Bacteriology
Certificate in Food and Nutrition	Andhra Pradesh Open University, 6-3-645 Somajiguda, AP	No formal degree
Diploma in Nutrition and Dietetics	Smt. Padmavati Mahila Vishvavidyalayam, Tirupati, AP	B.Sc. (Home Sc.)
BA with Nutrition and Health Education with Food Tech., Nutrition and Health	University of Delhi, Delhi	10+2
B.Sc. Food and Nutrition	University of Delhi, Delhi	10+2
M.Sc. Food and Nutrition, Community Resources Mgt., Child Dev. & Family Relations	University of Delhi, Delhi	B.Sc. (Home Sc.)
Certificate in Dietetics & Public Health Nutrition	Indira Gandhi National Open University, Maidan Garhi, New Delhi	B.Sc. (Chem./ Microbio.)
Certificate in Food & Nutrition	Indira Gandhi National Open University, Maidan Garhi, New Delhi	No formal degree

<i>Course</i>	<i>Institution</i>	<i>Eligibility</i>
PG Diploma Course in Food and Nutrition Mgt.	Sardar Patel University, Vallabh Vidyanagar, Gujarat	B.Sc. (Home Sci.)
M.Sc. in Home Mgt. & Child Dev.	Sambalpur University, Jyoti Vihar, Burla, Sambalpur, Orissa	B.Sc. (Home Mgt.)
Diploma in Nutrition and Dietetics	Punjab University, Sector 14, Chandigarh, Punjab	B.Sc. (Home Sci.)
M.Sc. Food & Fermentation Technology	Guru Nanak Dev University, Amritsar, Punjab	B.Sc. (Home Sci.)

**ANNEXURE - XI**

**List of Institutes offering Diploma in Prosthetics and Orthotics Engineering**

Christian Medical College, Thorapudi P.O, Vellore-632 002,  
(Tamil Nadu)

Govt. Institute of Rehabilitation of Medicine, K.K. Nagar,  
Chennai - 600 083, (Tamil Nadu)

Safdarjung Hospital, Department of Rehabilitation, Ansari Nagar,  
New Delhi - 110 016

Schieffeline Leprosy Research & Training Centre, Karigiri, S.L.R.  
Sanatorium P.O., North Arcot Distt., Tamil Nadu - 632 102

**List of Institutes offering Bachelors in Prosthetics and Orthotics**

All India Institute of Physical Medicine and Rehabilitation, Haji Ali  
Park, K. Khadya Marg, Mahalaxmi, Mumbai - 400 034

National Institute for the Orthopaedically Handicapped, B.T. Road,  
Bon-Hooghly, Kolkata - 700 090 (West Bengal)

National Institute of Rehabilitation Training and Research  
(NIRTAR), Olatpur, P.O.Bairoi, Cuttack - 754 010

**Note: Information in respect of Institutions listed at Annexure-I to Annexure-XI may vary from time to time. For latest information in this regard prospectuses of the Institutes may be consulted.**

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*Price : Inland Rs. 33.00 ; Foreign £ 0.43 or \$ 0.69.*