

SYLLABUS  
FOR  
THE TRADE OF

# PHYSIOTHERAPY TECHNICIAN.

UNDER

CRAFTSMANSHIP TRAINING SCHEME

DESIGNED IN

2005

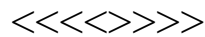
Govt. of India  
Ministry of Labour & Employment (DGE&T)  
**Central Staff Training & Research Institute**  
EN, Block, sector V, Salt Lake City  
Kolkata-91

## **LIST OF MEMBERS ATTENDED TRADE COMMITTEE MEETING**

<b>Sl.No.</b>	<b>Name</b>	<b>Office</b>	
1	Sri M.S. Lingaiah, Director	CSTARI, Salt Lake, Kolkata – 91	<b>Chairman</b>
2	Prof. S. Basu, Special Secretary Health and Family Welfare.	Govt. of West Bengal, Deptt. Of Health.	Member
3	Prof. S. Pal, Professor, Biomedical Engg.	Jadavpur University, Kolkata-72	Member
4	Sri Aminul Ahsan,	West Bengal Voluntary Health Association	Member
5	Sri Jnan Praakash Poddar	Indian Institute of Training & Dev. SRIJAN, Kolkata.	Member
6	Dr. Jyanta Kr. Paul	Nilratan Sarkar Medical College Hospital, Kolkata.	Member
7	Dr. Prabir Chowdhury, Radiation Oncologist.	Chittaranjan National Cancer Institute	Member
8	Dr. Soumitra Kr. Chowdhuri, Head,	Chittaranjan National Cancer Institute	Member
9	Dr. Suparna Majumdar, HOD/Deptt. Deptt. Of Radiology.	Chittaranjan National Cancer Institute	Member
10	Dr. P.K.Sarkar, Head, Health Physics Unit.	Variable Energy Cyclotron Centre.	Member
11	Prof. Anjali Mukherjee, Sivatosh Mukherjee Science Centre	S .M. Sc., Kolkata - 25	Member
12	Dr. R. Kumar Angrish	Life Aids Physiotherapy Unit, New Alipore, Kolkata.	Member
13	Mrs. Prachi Angrish	- do -	Member
14	Sri R. Senthil Kumar, JDT	CSTARI, Salt Lake, Kolkata-91	Member
15	Sri M.M. Gera, DDT	CSTARI, Salt Lake, Kolkata-91	Member
16	Sri T. Mukhopadhyay, DDT.	CSTARI, Salt Lake, Kolkata-91	Member
17	Sri S. Kumar, JDT	CSTARI, Salt Lake, Kolkata-91	Member
18	A.Chakraborty, ADT	CSTARI, Salt Lake, Kolkata-91	Member
19	Sri P.K. Koley, T.O.	CSTARI, Salt Lake, Kolkata-91	Member
20	Mrs. Anindita Chakraborty, Psychologist.	Salt Lake, Kolkata	Special Contributors
21	Dr. N.L. Dutta Banik	Kolkata.	Special Contributors
22	Dr. K.L. Ganguli	Bharat Seva Shram Sangha	Special Contributors

## GENERAL INFORMATION

1. Name of the Trade : Physiotherapy Technician
2. N.C.O. Code No. :
3. Duration : 1 years
4. Entry qualification : Passed 12<sup>th</sup> class Exam.  
Under (10+2)system of  
Education with Physics,  
Chemistry and Biology.
5. Space Requirement : 100 Sq. Meter.



**SYLLABUS FOR THE TRADE OF PHYSIOTHERAPY TECHNICIAN**  
**Under Craftsmen Training Scheme**

**DURATION: 1 year**

Week No.	Theory	Practical	Workshop Cal. & Science	Engineering Drawing
1	<b><u>i) Introduction to Anatomy/Physiology</u></b> a) Definition & the sub-divisions of anatomy. b) Anatomical & fundamental position. c) Anatomical regions, sections & planes. d) The descriptive Anatomical terms.	Demonstration & A.V. display	<b><u>Physics:</u></b> General properties of Matter, Surface Heat (thermometry and calorimetric), Acoustics,	Basic concept of Engineering Drawing , Ist & 3 <sup>rd</sup> angle projection .
2	<b><u>ii) Osteology</u></b> a) Basic terminologies b) About the skeleton c) Brief descriptions about Bone & Cartilage (structure, types , functions etc.) d) Identification, side determinations & structural details of bones of skull, Thorax, Vertebral column, Upper & Lower extremities	1. Techniques of Massage of different parts of the Human Body- 2. Kynationology 3. Head & Neck Massage b) Arms Massage c) Back Massage d) Upper leg, Lower leg & Foot Massage 4. Therapeutic application of Massage (such as Bell's palsy, Paraplegia, Hemiplegia etc.) —	Atomic Physics – Semi conductors, Photo-electricity, X-Ray, Radioactivity.	Free hand sketches of bones, spinal cord, joints.
3	<b><u>iii) Orthrology</u></b> a) Definition & classifications of joints b) The terms related to the movements of joints	Demonstration & A.V. display	<b><u>Physical Chemistry</u></b> Solutions, osmotic pressure, lowering of vapour pressure. Electrochemistry,	Free hand drawing of skeleton of human body

	<p>c) Description of joints of the upper &amp; lower extremities with their ligamental</p>		<p>Ionic Equilibrium, Acids &amp; Base pit and indicators. Surface chemistry, colloid chemistry, Structure of Matter, Radioactivity.</p>	
4.	<p><b>iv) <u>Neurology</u></b>  a) Knowledge of CNS and its pathology.  b) Knowledge of Central Nervous System &amp; its pathology.  c) Description about Spinal nerves  d) Nerve plexus of the body with their distributions (cervical plexus, brachial plexus, limbo-sacral plexus)</p> <p><b>v) <u>Myology</u></b>  a) Classifications &amp; structures of Muscles  b) Description of all major muscles with their origin, insertion, nerve supplies, blood supplies &amp; actions.  c) Muscles acting on joints of upper &amp; lower extremities</p>	<p>Demonstration &amp; A.V. display</p> <p>Demonstration &amp; A.V. Display</p>	<p>-- do -</p>	<p>Drawing of human body &amp; different organs</p> <p>Drawing of major muscles , nerve supplies &amp; blood supply &amp; action</p>
5.	<p><b>vi) <u>Visceral Anatomy</u></b>  Description of organs related to Digestive, Respiratory, Circulatory, Excretory &amp; Reproductive System (in brief)</p> <p><b>vii) <u>Radiological Anatomy</u></b>  Demonstration of some normal and abnormal x-ray plates.</p>	<p>Demonstration &amp; A.V. Display</p> <p>Study of different X-Ray plates</p>	<p>Food &amp; Nutrition</p>	<p>Drawing of Digestive, Respiratory &amp; Excretory system</p>
6-7	<p><b>viii) <u>Applied Anatomy</u></b>  Common clinical conditions of Axial &amp; Appendicular skeleton such as,  a) Carpal tunnel syndrome b) Erb's palsy  c) Klumpke palsy d) De</p>	<p>Identification of bones, nerve routes and mussel attachment, related surface, reading X-ray plates, types of</p>	<p><u>Electronics</u> - Semiconductors – Diode, Rectifier, transistors, Analog &amp; Digital circuits Amplifier</p>	<p>Drawing of different joints of human organ.</p>

8	<p>Quervain's disease  e) Dupuytren contracture  g) Trigger finger, Mallet finger  h) Wrist ganglion</p> <p><b>i) Rotator cuff</b>  Impingement Syndrome (R.C.I.S)  j) Fixed Flexion Deformity (F.F.D)  k) Wrist drop  l) Road Traffic Accident (R.T.A)  m) Deltoid ligament rupture  n) Achilles tendon rupture  o) Trendelenburg's sign  p) Tarsal tunnel syndrome  q) Genu valgum/vera  r) Coxa valgum/vera s) Hallux valgus t) Foot drop</p> <p><b><u>PHYSIOLOGY</u></b>  <b><u>i) Cell-</u></b> definition, structure &amp; function – Tissues – structure, function.  <b><u>ii) circulatory system</u></b>  a) Structure &amp; function of heart  b) Heart rates &amp; Heart sound  c) Blood circulation d) Composition &amp; function of Blood e) Blood pressure &amp; the influencing factors  <b><u>iii) Nervous system</u></b>  a) About the Nervous tissue- Neuron (structure &amp; function), Neuroglia (Definition)  b) About the Nerve fibers- motor &amp; sensory  c) Divisions of Nervous system  d) Central Nervous System- classifications, structures &amp; functions of Brain &amp; Spinal cord (in brief)</p>	<p>joints &amp; their movements in different axes, Nerve muscle physiology, measurement of B.P. pulse &amp; idea of reflexes and their examination</p> <p>Nerve muscle physiology, measurement of B.P. Pulse and idea of reflexes and their examination</p> <p>Case history recording &amp; follow-up in Clinic on patient.</p>	<p>Environments Management – Basic concepts, <u>Mathematics</u> - Basic algebra, trigonometry, mensuration.</p> <p><b><u>Computer</u></b> – Window-98 Data entry operation. Window - 2000</p> <p><b><u>Bio chemistry:</u></b>  Chemistry of water, Mineral, Vitamins, Protein, Carbohydrate, Lipids, Nucleic acids, Enzymes, Blood, Extra cellular fluids.</p> <p>Metabolism of Carbohydrate, Proteins, Lipids, Amino acids, Hemins, Purines, Pyrimidines and Nucleic Acids. Nature, properties, Kinetics and mechanism of action of energy and co-enzymes, Biological</p>	<p>Different drawing of bones, nerve roots &amp; muscle attachment</p> <p>Sketches of heart</p> <p>Sketches of Neurons and nerves</p>
---	--	---	--	---

	<p>e) Peripheral Nervous system- Cranial Nerves (names &amp; functions) &amp; Spinal Nerves (introduction) f) Sensory System-pain</p> <p><b><u>iv) Skin &amp; Temperature regulation-</u></b> a) Structure of skin b) Function of skin c)Temperature regulation system</p> <p><b><u>v) Food &amp; Nutrition-</u></b> a) Definition &amp; types of Food (carbohydrate, protein, fat, minerals,. Vitamins, water with example &amp; brief descriptions b) Balance diet c) Relation between Food &amp; Nutrition</p> <p><b><u>vi) Digestive System-</u></b> a) Structure &amp; function b) Details of food materials c) Steps of Digestion , Absorption &amp; metabolism (in brief) c) Neurological factors related to Digestion</p> <p><b><u>vii) Respiratory system-</u></b> a) Structure &amp; Function b) Process of Respiration b) Technical datas related to pulmonary activity in relation to stress &amp; rest c) Cardio-Respiratory relation d) Artificial Respiration e) Neurological control</p> <p><b><u>viii)Endocrinology-</u></b> a) Definition, character &amp; function of Hormones b) About the Hormone secreting glands c) Hormonal control on physiological activities</p>		<p>oxidation and bio-energetic.</p> <p>Basic Ideas of Chemical Reactions</p>	<p>Sketches of digestive system</p> <p>Sketches of respiratory system</p>
--	---	--	--	---

	<p><b><u>ix) Excretory system-</u></b>  a) About the nephron  b) Structure &amp; function of Kidney  c) Formation of urine d) Micturation</p>			
11.	<p><b><u>GYNAECOLOGY &amp; OBSTETRICS</u></b>  1. Introduction to Human Reproductive System  2. Physiology of pregnancy</p>	Antenatal and postnatal exercises.		Sketches of excretory system
12.	<p><b><i>PHYSIOTHERAPY :</i></b>  <b><u>i. Introduction:</u></b> a) definition of Physiotherapy  Terms of Physiotherapy i.e. Electrotherapy, Exercise-therapy, Massage-therapy, Ergonomics, Rehabilitation.  d) definition of electrotherapy, Safety precautions in Electrotherapy.  e) Physical modalities, which are used in Physiotherapy.</p>	Identification of different Tools , equipment		
13.	<p><b><u>2. Cryo therapy :</u></b>  a) Physiological effects  b) Methods of application (ice pack, cold pack, ice towels, ice bath, ice cube massage, vapocoolant sprays)  c) cryokinetics d) Indications &amp; Contraindications</p>	Application of ice pack, cold pack, ice towels, ice bath, ice cube message.		
14.	<p><b><u>3. Thermotherapy:</u></b>  <b>a) Superficial Heating Agents-</b>  A. Hot packs- Physiological effects, types of Hot Packs (hydrocollators, Kenny packs, hot water bag, electrical heating pads) with their Techniques of application,</p>	Demonstration of hot packs, Kenny packs, hot water bag etc. & its applications.		



	Indications & Contraindications			
15.	<b>B. Wax bath</b> - About the wax, Descriptions of a Wax bath Unit, Composition & method of preparation of wax bath, physiological effects, Techniques of application, Indications & Contraindications.	Demonstration and Practice on wax bath preparation & its applications.		
16.	<b>C. Infra-Red Radiation-</b> About the Infra-red rays, Sources of Infra-red rays, Technical datas, Physiological effects, Techniques of application, Terminations of IRR, Indications & Contraindications.	Demonstration and Practice on infra-red applications.		
17.	<b>b) Deep Heating Agents –</b> <b>A) S.W.D-</b> meanings of Short-wave & Diathermy, Effects of S.W.D. Technical datas, Descriptions of a S.W.D Instrument, Method of application, Positioning of Electrode pads During, Treatment, Dose & Duration of treatment, Indications & Contraindications.	Demonstration on application on S.W.D.		
18.	<b>B) M.W.D-</b> Introduction. <b>C) U.S.T-</b> About the Ultra sound, Difference among Ultra sound, Infra sound & Audible sound, Effects of U.S.T in Human body, Technical datas, Descriptions of an U.S.T Instrument, Description about different types of Coupling medium, Method of application of U.S.T, Dose & Duration of treatment, Indications & Contraindications.	Demonstration And Practice		



<p>22-24</p>	<p>d) <b><u>I.F.T-</u></b> Introduction, application, Indications &amp; Contraindications.</p> <p><b><u>Clinical Decision Making in Electrotherapy-</u></b> Differential application of S.W.D, U.S.T, F.S, G.S, T.E.N.S, I.F.T, I.R.R, Wax bath.</p> <p><b><u>MASSAGE THERAPY &amp; REHABILITATION.</u></b> a) Definition of Massage b) Aim of Massage c) Physiological effects of Massage d) Therapeutic uses of Massage e) Contraindications of Massage f) Materials used in Massage (oil, powder, ice etc.) g) Rules &amp; direction of Massage h) Types of Massage</p>	<p>Demonstration on application on U.S.T.etc.</p> <p>Demonstration on basic massage techniques, gait training.</p>		
<p>25-31</p>	<p><b><u>EXERCISE THERAPY &amp; YOGA.</u></b> <b>a. Exercise Physiology:</b> 1. <u>Energy System</u> - a) Metabolism b) Energy in Muscular Activity- ATP-PC System, Lactic Acid System, Oxygen System c) Aerobic &amp; Anaerobic pathways during Rest &amp; Exercise d) Measuring energy during Exercise</p> <p>2. <u>Foods, Nutrition &amp; Exercise</u> Effects of Exercise on Carbohydrate, Protein &amp; Fat Requirement</p> <p>3. <u>Thermoregulation &amp; Exercise</u> a) Conduction, Convection &amp; Evaporation b) Regulation of Internal Body Temperature c) Physiological</p>	<p>Application of traction, uses of walking aids</p> <p>Demonstration.</p>		

32-37	<p>thermoregulation d) Heat Disorders- Heart Stroke, Heat Exhaustion, Heat Cramp.</p> <p>4. <u>Respiration</u>- a) Muscles for Inspiration &amp; Expiration b) Static &amp; Dynamic Lung Volume c) Gaseous Exchange d) Adaptational changes to physical training e) Maximum aerobic Capacity VO2 Max.)</p> <p>5. <u>Cardiovascular Adaptations</u>- a) Sub maximal Exercises b) at maximal Exercises</p> <p>6. <u>Fatigue</u> – a) Types of b) Symptoms c) Methods of Recovery</p> <p>7. <u>Exhaustion</u></p> <p>8. <u>Endurance</u>- a) Definition b) Endurance Training</p> <p>9. <u>Kinesiology &amp; Biomechanics</u>: Basic terminologies &amp; practical approach</p> <p><b><u>B. Fundamentals of Exercise</u></b></p> <p>1. Definition of Exercise 2. Benefits of Exercise 3. Physiological changes during Exercise. 4. Classifications of Exercise- active, passive, resistive, isometric, functional, stretching, strengthening, closed-chain, open-chain etc.</p> <p><b><u>C. Applied Exercise Therapy</u></b></p> <p>1. Manual Muscle Testing 2. Techniques of Stretching Exercise- Region of shoulder, elbow, wrist, trunk, hip, knee, ankle 3. Exercises for Muscles</p>	<p>Demonstration</p> <p>Demonstration.</p> <p>Demonstration.</p> <p>Demonstration.</p> <p>Demonstration.</p> <p>Demonstration</p> <p>Demonstration.</p>		
-------	--	---	--	--

38-43	<p>Strengthening – Region of shoulder, elbow, wrist, trunk, hip, knee , ankle</p> <p>4. Techniques of P..F.</p> <p>5. Techniques of Breathing Exercises.</p> <p>6. Exercises for Co-ordination &amp; Balance</p> <p>7. Exercise with Instruments</p> <p>8. Exercise for increase ROM</p> <p>10. Goniometry</p> <p>11. Exercise as a Treatment of Diseases</p> <p>a) Cervical Spondylosis b) Lumber Spondylosis c) Ankylosing Spondylosis d) Tennis Elbow e) Golfers Elbow f) Joint Stiffness g) Frozen Shoulder h) Bell’s palsy I) Paralysis j) out k) R.A l) O.A. m) Foot Drop n) Wrist Drop o) Perkinsonism</p> <p><b><u>ORTHO-NEURO-GENERAL</u></b></p> <p><b><u>Orthopaedical condition:</u></b> Etiology, C/F, Investigations &amp; Physiotherapeutic Management of the followings: -</p> <p>i) Kyphosis ii) Lordosis iii) Scoliosis iv) Cervical Spondylosis v) Lumber Spondylosis vi) Ankylosing Spondylosis vii) Tennis Elbow viii) Folger’s Elbow ix) Gout x) Osteo-arthritis xi) Rheumatoid Arthritis xii) Frozen Shoulder xiii) Fracture xiv) Dislocation &amp; subluxation xv) Sprain xvi) Tendonitis. xvii) Rickets xviii) Osteomalacia xix) Osteomyelitis xx) Calcaeneal Spar xxi) Flat foot.</p> <p><b><u>Neurological Condition:</u></b> Etiology, C/F, Investigations</p>	<p>Demonstration.</p> <p>Demonstration.</p> <p>Demonstration.</p> <p>Demonstration.</p>		
-------	--	---	--	--

	<p>&amp; Physiotherapeutic Management of the followings:-</p> <p>i) Cerebral palsy  ii) Hemiplegia iii) Paraplegia  iv) Quadriplegia v) Myalgia  vi) Fibromysitis vii) Polio Myelitis  viii) Parkinsonism  ix) Bell's palsy x) C.V.A  xi) Upper &amp; Lower Motor Neurone diseases  xii) Peripheral Nerve Injury  xiii) Spinal Cord Injury  xiv) Sciatica</p> <p><b>General condition:</b>  Etiology, C/F, Investigations &amp; Physiotherapeutic Management of the followings: -</p> <p>i) Obesity ii) Burns iii) Epilepsy etc.</p>	Exercises for each condition, abnormal X-rays and related lab. investigations.		
44-47	<b>CASE STUDIES</b>			
48-51	<b>VISIT TO HOSPITAL &amp; PHYSIOTHERAPY CENTRES</b>			
52.	<b>REVISION &amp; TEST</b>			

**Social Studies – The Syllabus is Already Approved & Common for All Trades**

**LIST OF TOOLS AND EQUIPMENT**  
**FOR PHYSIOTHERAPY**

For a batch of 16 trainees.

Sl. No.	Items	Quantity.
1	Diagram of - (i) Human Organs } (ii) Exercises charts }	1 set
2	Wax bath	1 no.
3	I. R. Radiator	1 no.
4	Short wave Diathermy unit	1 no..
5	Electric Muscle nerve Stimulator	1 no.
6	Battery 6V & 12V	2 nos.
7	Battery Eliminator 6V, 9V, 12V	2 nos.
8	Traction set up including Pulley, Weight Table unit	1 set.
9	Apparatus for various exercises-Shoulder Wheel, Shoulder pulley, Finger exerciser.	1 Set Assorted
10	Durra mats	10 nos.
11	Table	1 no.
12	Chair with Desk	16 nos.
13	Cup Board	2 nos.
14	IFT (Interferential Therapy)	1no.
15	TENS (Trans Electric Nerve Stimulator)	1 no.
16	Ultra sound Apparatus	1 no.

Pkk /