

Curriculum
for the
Two Years' Post Matric Competency Based
Diploma in
Physiotherapy Technology

(New Scheme)



Punjab Medical Faculty
2014

Preface

After introduction of the new service structure for Allied Health Professionals (AHPs) in 2012 the qualification requirement for entry in service has been changed to a diploma of two years' duration. This decision has necessitated the development of curricula for the new scheme of studies. The evolving health needs of the community, exponential advances in medical and allied technologies and changes in health services provision, functions and structure also demand continual and responsive changes in education and training programs meant for AHPs. The revised curricula would carry out the following important functions:

- link pre-service education and training with actual tasks AHPs have to perform after being employed, especially in the public sector
- modernize training program by weeding out subjects that have become obsolete and including subjects that are currently considered essential
- provide clarity on subjects and topics to be taught delimiting the breadth and depth of teaching
- give clarity to examiners on what is to be tested and how
- stimulate critical faculties of both teachers and students to conceptualize topics rather than memorizing them.

Focus of the new curricula would be on integration of tasks and multi-skilling of students. Thus there would be a common knowledge base for all courses in the form of a *Core Course* which would provide insight into essential technical knowledge besides providing base for development of the education for Allied Health Sciences up to post graduate level.

The goal of this document has been to outline a common body of knowledge that is essential for entry-level physiotherapy technicians. Combined with the Core Course it will provide a broad knowledge base for the technicians and provide opportunities for practical skill development in the relevant field. This needs based curriculum places practical skills development at high priority. Content and apprenticeship experiences is designed to sequentially develop, apply, critically analyze, integrate, synthesize and evaluate concepts and theories in the performance of physiotherapy procedures.

General Outline

Aim of this curriculum is to equip students with the relevant professional knowledge, skills and techniques to enable them to apply their acquired expertise for efficient health service delivery. At the end of training the student should be able exhibit the following general and specific competencies:

1- General learning objectives

1. Act upon his / her job description ethically keeping in mind the requirements of community and people at large.
2. Demonstrate empathy and humane approach towards communities and exhibit interpersonal behavior in accordance with the societal norms and expectations.
3. Demonstrate sufficient understanding of basic sciences related to his technology and be able to integrate such knowledge in his / her work.

2- Specific learning objectives:

A student should gain knowledge and skill and develop competencies and be enabled to assist the physiotherapist in the conduction of following duties:

Preventive / Promotive

- Provide information to the patient about the proposed intervention, its material risks if any and expected benefits and any reasonable alternatives.
- Provides educational information about physiotherapy and physiotherapists, injury prevention, ergonomics and ways to promote physical health.
- Facilitate group rehabilitation activities.

Rehabilitative

- Implement a comprehensive treatment plan developed by a physical therapist
- Communicate regularly with the supervising physical therapist about the patient's progress and the need to adjustments to be made by the physical therapist in treatment procedures in accordance with changes in patient status
- Perform appropriate measurement and assessment techniques within the knowledge and limits of practice to assist the supervising physical therapist in monitoring and modifying the plan of care
- Interact with patients and families in a manner that provides the desired psychosocial support including the recognition of cultural and socioeconomic differences
- Constructs, maintains and repairs medical supportive devices.
- Records physiotherapy done with response / progress in patient's chart or enter information into computer.

B. Distribution of Training Time

The two years' program would be divided in three distinct parts (Papers). There will be a 'Core Course' which would be common for all technologies. The examination for this component will be taken at the end of first academic year. The teaching for specific aspect of this technology will be divided in two sections; examination for these will be held at the end of second academic year – however, teaching for specific techniques will start from the first year.

A typical training day for students at training institutions routinely comprises of five hours. Keeping a generous allowance of holidays and weekends, an academic year for students would be 200 days. Therefore, 1000 teaching hours would be available in 12 months. In the new scheme of studies, for the Core Course the proportion of classroom teaching and practical training (applied learning activities) would be 60:40; whereas this proportion for the specific techniques would be 40:60 and the time allocations for dividing teaching time between various topics, units and sub-units will be done accordingly as depicted below:

Core Course	500
Section I (Paper I)	750
Section II (Paper II)	750
Total	2000

The marks distribution for this diploma would be:

Subject	Marks
First Year	
Core Course	100
Viva	100
Second Year	
Section I	100
Section II	100
Practical / Viva Section I	100
Practical / Viva Section II	100
Total:	600

C. Essential Teaching Requirements

I. Training requirements/instructional methodologies (Process)

- a. Teaching staff will be given in-service training as recommended by PMF from time to time.
- b. Teachers will use a combination of interactive programmed instructions (non-IT), class teaching with exercises using audiovisual aids, mini-lectures, group discussions, simulations and case studies as instructional/teaching methodologies.
- c. IT will be employed for teaching where necessary.
- d. A combination of English and Urdu languages will be used as medium of instruction.
- e. Teachers will encourage students to ask questions; they will encourage debate and discussion in class to inspire and hone thinking skills of students. Students will be given the opportunity to engage in activities that promote divergent thinking skills. Students will be encouraged to work independently, as well as in small groups and as a whole class, to form creative associations of ideas across discipline lines.

II. Practical learning component

As prime objective of the training program is to develop practical skills, an extended clinical attachment is its essential part. The student will rotate amongst various sections of physiotherapy department and his/her attendance will be recorded on a logbook to be signed by supervisors. Teachers will ensure that students are given chance to practice activities under supervision that are relevant to the topic being taught in class in order for them to develop relevant practical skills.

The detail of specifications for the institution imparting education according to the new scheme of studies – including the facilities for practical attachment – is available in ‘New Affiliation Criteria’ for such institutions.

F Organization of Units of Curriculum

The different units presented in the subsequent sections would comprise of the following components, not essentially in the sequence depicted below:

- a. Learning Focus (contents, hours, weightage for assessment)
- b. Rationale
- c. Scope
- d. Learning Objectives (aims and learning outcomes)
- e. Practical Learning Component (where applicable)

G Revisions and Updating of Curriculum

The curricula are ever evolving organic documents. Regular reviews and revisions are, therefore, essentially required to keep them in pace with modern needs; topics that are required now might outlive their utility in a few years. Updating curricula therefore forms the basis for quality teaching as well as professional competence of AHPs. This would be ensured by technology-wise panels of experts notified by the Health Department.

SECTION 1
Paper I
Fundamentals of Physical Therapy

Unit 1	Introduction of Physical Therapy Applied Physics for Physiotherapy
Unit 2	Mechanics Sub-unit 2.1 Fundamentals of Mechanics Sub-unit 2.2 Biomechanics
Unit 3	Kinesiology Sub-unit 3.2 Functional Kinesiology
Unit 4	Therapeutic Exercises
Unit 5	Electrotherapy Sub-unit 5.1 Electric Currents & Magnetics Sub-unit 5.2 Application of Low Frequency Currents Sub-unit 5.3 Application of High Frequency Currents – Diathermy
Unit 6	Radiation Sub-unit 6.1 Fundamentals of Radiation Sub-unit 6.2 Actinotherapy: Application of Infra-Red & Ultra Violet Rays Sub-unit 6.2 Ultra Sonics
Unit 7	Appliances and Prostheses

SECTION 1

Fundamentals of Physical Therapy

1. Rationale

Due to strong linkage of physics with administration of physiotherapy treatment it is essential that the students of Physiotherapy receive basic knowledge in those aspects of physics which are related to their area of work. This foundation knowledge would help in understanding of application of various therapeutic techniques while executing treatment plans for patients.

2. Scope

The student will be imparted basic understanding of general physics in the fields of electromagnetism, electrical circuits and basic electronics. Students will learn about currents and their use in medical field. They will also be apprised about production of different rays including infrared rays, UV rays, short waves and ultrasound. It would also cover the precautions and contraindications for using the currents and waves for therapeutic purposes.

Services of part/full time teachers in Physics will be acquired in order to appropriately train students in this subject. The training may coincide with teaching of different units of physics for the students of diagnostic radiology.

3. Learning Objectives

After completing this section, the student will be able to:

- i. Know about the historic development of physiotherapy and role of physiotherapy technician in management of patient
- ii. Understand application of physical laws in treatment; appreciate the basic principles of physics which govern the application of physiotherapy.
- iii. Comprehend the dangers of and contraindications for using different currents and waves for therapeutic purposes and the importance of different precautionary measures.
- iv. To undertake time and dose adjustment to effectively execute treatment plan.

Unit 1

Introduction of Physiotherapy

Learning Focus	
i.	History of Physiotherapy
ii.	Branches of physical therapy
iii.	Role of Physiotherapist in medical profession
iv.	Domain of physiotherapy technician
Total Teaching	25 hours
Weightage for Assessment	3%

Unit 2

Mechanics

Sub-unit 2.1

Fundamentals of Mechanics

Learning Focus	
i.	Force: Unit of force, application of force on human body (direction, magnitude, results of two or more forces acting on human body); Tension
ii.	Gravity: center of gravity, line of gravity, base of support, application of gravity on human body; Equilibrium, stable, unstable and neutral equilibrium of human body; Fixation and stabilizing of human body, active and passive fixation and stabilizing; mechanics of movements in human body; Axes and planes of human body, planes of movement of gravity, movement in the horizontal, inclined plane and vertical plane
iii.	Speed: speed of exercises, velocity, power, acceleration, inertia, friction, elasticity (application in human body)
iv.	Lever; classification; Pulley & pulley systems, angle of pull (application on human body)
v.	Suspension and its Application on Human Body
Total Teaching	70 hours
Weightage for Assessment	9%

Sub-Unit 2.2
Biomechanics

Learning Focus	
i.	Musculoskeletal dysfunctions
ii.	Preliminary exercise and measurements involving different geometrical dimensions
iii.	Biomechanical advantages and disadvantages of exercise equipment
iv.	Traction – cervical and lumbar
Total Teaching	60 hours
Weightage for Assessment	8%

Unit 3
Kinesiology

Learning Focus	
i.	Classification of passive movements; reflex passive movements, forced passive movements: techniques and effects
ii.	Classification of active movements; assisted active movements, resisted active movements, free active movements – techniques and effects
iii.	Introduction to Pulley and Weight Circuit; effects and uses of pulley circuit
iv.	Different Postures; effects, uses and muscular work, standing, lying, hanging, kneeling, sitting, pelvic tilt
v.	Relaxation; definition, methods of promoting relaxation, effects and uses
vi.	Posture drawing and control – maintenance of correct posture
vii.	Breathing exercises – techniques and effects
Total Teaching	70 hours
Weightage for Assessment	9%

Sub Unit 3.2

Functional Kinesiology

Learning Focus	
i.	Mechanical aspects of human motion and the analysis of motion
ii.	Goniometry and manual muscle testing
iii.	Competency-based skill checks and practical
Total Teaching	60 hours
Weightage for Assessment	8%

Unit 4

Therapeutic Exercises

Learning Focus	
i.	Analysis of exercise programs and equipment in relation to tension, compression, and shearing forces
ii.	Basics of therapeutic exercise including affective, cognitive and psychomotor performance of passive, active-assistive, active, resistive and stretching exercises
iii.	Rehabilitation for a variety of specific patient disorders such as cancer, diabetes, PVD, pulmonary, cardiac, burns and geriatrics
Total Teaching	60 hours
Weightage for Assessment	8%

Unit 5

Electrotherapy

Sub Unit 5.1

Electric Currents & Magnetics

Learning Focus	
i. Static Electricity: structure of matter, structure of atom, theories of electricity, production of an electric charge, characteristics of a charged body, potential and capacity	
ii. Current Electricity: the electric current; understanding of electric power: Intensity, resistance, capacity; Units of electric power, intensity, resistance, capacity; resistances in series and parallel; devices for regulating intensity of current; electrical energy and power	
iii. Magnetism: nature of magnetism; properties of a magnet, magnetic effect of an electric current	
iv. Electromagnetic induction: Principles of electromagnetic induction, dynamo, static transformer, variable transformers, autotransformer	
v. The Condenser: potential and capacity, principles of condenser, capacity of a condenser, construction of a condenser; electric field; charging and discharging of a condenser	
vi. Valves and semiconductors: the thermionic valve, semiconductors, rectification of alternating current	
vii. Main Supply: production, type of current, distribution, grid system	
viii. Low frequency Currents: types of low frequency current; direct current & alternating current, Faradic & Galvanic current, interrupted direct current & alternating current, modified currents	
ix. High frequency currents: principles, properties and production; types of high frequency current (long wave, short wave, micro wave)	
Total Teaching	80 hours
Weightage for Assessment	11%

Sub-unit 5.2

Application of Low Frequency Currents

Learning Focus	
i. Introduction to Faradic current, techniques and application	
ii. Introduction to Galvanic current, techniques and application	
iii. Introduction to Interferential current, effects and uses	
iv. Introduction to Sinusoidal current, effects and uses	
v. Introduction to TENS (Transcutaneous Electrical Nerve Stimulation), physiological and therapeutic effects, techniques	
Class Room teaching	60 hours
Weightage for Assessment	8%

Sub-unit 5.3

Application of High Frequency Currents – Diathermy

Learning Focus	
i.	Introduction of Micro wave & shortwave diathermy and general considerations
ii.	Therapeutic effects of Micro Wave & shortwave diathermy; dangers and applications
iii.	Indications and contraindications of Micro wave & shortwave diathermy
Total Teaching	60 hours
Weightage for Assessment	8%

Unit 6

Radiation

Sub-unit 6.1

Fundamentals of Radiation

Learning Focus	
Definition & understanding of cycle and wavelength	
Electromagnetic spectrum	
Radiant energy, laws governing radiations	
Understanding of refraction and reflection	
Heat: heat and temperature, physical effects of heat, methods of transmission of heat	
Infra-red rays: sources of Infrared rays, Infra-red generators	
Ultra-violet rays: sources of ultraviolet rays	
Micro Wave: : properties and sources	
Ultrasound: introduction and characteristics, ultrasonic energy, production of ultra-sonic waves	
Total Teaching	65 hours
Weightage for Assessment	10%

Sub-unit 6.2
Actinotherapy
Application of Infra-Red & Ultra Violet Rays

Learning Focus	
i. Introduction to therapeutic effects	
ii. Techniques of Irradiation	
iii. Dangers and contraindications and Precautions	
Total Teaching	60 hours
Weightage for Assessment	8%

Sub-unit 6.3
Ultra Sonics

Learning Focus	
i. Therapeutic effects	
ii. Techniques of application	
iii. Dangers and precautions	
iv. Indications and contraindications	
Total Teaching	40 hours
Weightage for Assessment	5%

Unit 7
Appliances and Prostheses

Learning Focus	
i. Mobility Aids; dependent and independent aids	
ii. Splints	
iii. Orthopedic Appliances	
iv. Upper & Lower Limb Prostheses	
Total Teaching	40 hours
Weightage for Assessment	5%

SECTION 2

Paper II

Physiotherapy Treatment & Techniques

Physiotherapy Management of Medical & Surgical Conditions

Unit 1 Protocols for Management

Unit 2 Diseases of Nervous System

Unit 3 Diseases of Muscles and Joints

Unit 4 Fractures and Deformities

Unit 5 Traumatic Conditions and Soft Tissue Injuries
(Sports Injuries)

Unit 6 Diseases of Pulmonary System

Unit 7 Diseases of Heart

Unit 8 Pre and Post-operative Care of Patient

Unit 9 Cryotherapy/Hydrotherapy/Paraffin Baths
Therapy

SECTION 2

Physiotherapy Treatment & Techniques

1. Rationale

Physiotherapy has come a long way from the early nineteenth century when massage and manipulation were seen as being outside the pale of medical science. It is gaining increasing importance for management of diseases and deformities - the profession addresses orthopedic, neurological and cardiopulmonary problems among infants, children, adults and geriatric populations. The art and science of physiotherapy is reliant on coordinated team work of physiotherapist and his/her assistants; therefore development of appropriate skills amongst technicians is of utmost importance. Knowledge of common ailments is also essentially required to form a basis on which treatment protocols for diseases prone to physiotherapy will be developed.

2. Scope

3. Learning will include introduction of different physical ailments for which physiotherapy is a good treatment option. These would include pathologies related to different systems, congenital disorders and physical strains and trauma. The contents would cover assistance in management of injuries, painful inflammatory conditions and deformities, especially those relating to changing lifestyle.

Training would build the basis for designing and implementation of different rehabilitation programs. Thus the student will be enabled to treat patient under supervision of qualified physiotherapist.

4. Learning Objectives

After completing this section, the student will be able to:

- i. Gain knowledge about diseases / deformities of different body systems and different types of trauma
- ii. Apply different treatment protocols under supervision of a qualified physiotherapist

Unit 1

Protocols for Management

Learning Focus	
i.	Patient's Management Principals: <ul style="list-style-type: none"> • Total body care • Prevention of expected complications • Enhancement of existing potentials of patient • Early involvement in daily functional life • Realization of patient potentials and communication to patient and family with positive approach
ii.	Skills required to actually treating patients (e.g.; patient positioning, use of assistive devices, gait training, verbal and written communication skills).
iii.	Initiation, documenting and completion of a treatment plan
Total Teaching	60 hours
Weightage for Assessment	8%

Unit 2

Diseases of Nervous System

Learning Focus	
i.	Classification of nervous system diseases
ii.	Upper Motor Neuron Diseases; Hemiplegia, Paraplegia, Cerebral Palsy
iii.	Lower Motor Neuron Diseases; Poliomyelitis, Progressive Muscular Atrophy
iv.	Chorea and Parkinsonism
v.	Peripheral Nerve Injuries; Radial Nerve, Ulnar Nerve, Femoral Nerve
vi.	Facial Palsy (Bell's Palsy)
vii.	Role of Assistant Physiotherapist in the management of diseases of Nervous System
Total Teaching	120 hours
Weightage for Assessment	16%

Unit 3

Diseases of Muscles and Joints

Learning Focus	
i.	The Dystrophies
ii.	Myasthenia Gravis
iii.	Osteoarthritis; causes and clinical features
iv.	Rheumatoid Arthritis; clinical features, deformities related to Rheumatoid Arthritis, management of Rheumatoid Arthritis
v.	Ankylosing Spondylitis
vi.	Septic Arthritis
vii.	Gout
viii.	Role of Assistant Physiotherapist in the management of diseases of muscles & joints
Total Teaching	120 hours
Weightage for Assessment	16%

Unit 4

Fractures and Deformities

Learning Focus	
i.	Definition, characteristic of Fracture
ii.	Clinical features and complications of Fractures
iii.	Different fracture sites, physiotherapy management of fractures
iv.	Various types congenital deformities; hip deformities, congenital dislocation of hip
v.	Coxa Vara and Coxa Valgus deformities
vi.	Knee Deformities; Genu Valgus, Genu Varus
vii.	Foot Deformities; Talipes Equinovarus , flat feet
viii.	Deformities of Spine; Scoliosis, Kyphosis, Lordosis
ix.	Role of Assistant Physiotherapist in the management of fractures & deformities
Total Teaching	120 hours
Weightage for Assessment	16%

Unit 5

Traumatic Conditions and Soft Tissue Injuries (Sports Injuries)

Learning Focus	
i. Joint Sprain, Strains	
ii. Synovitis, Bursitis	
iii. Tendonitis	
Total Teaching	80 hours
Weightage for Assessment	11%

Unit 6

Diseases of Pulmonary System

Learning Focus	
i. Bronchitis, Asthma, Emphysema	
ii. Bronchiactasis	
iii. Pneumonia; Lobar and Bronchial	
iv. Tuberculosis	
v. Pleurisy, pleural effusion, Pneumothorax	
vi. Respiratory Failure	
vii. Role of Physiotherapy Assistant in positioning & management of respiratory diseases	
Total Teaching	70 hours
Weightage for Assessment	9%

Unit 7

Diseases of Heart

Learning Focus	
i. Introduction to the Heart , Circulation through the Heart	
ii. Introduction of Pericarditis, Myocarditis, Endocarditis	
iii. Introduction to Ischemic Heart Diseases	
iv. Introduction of Coronary Valve Diseases	
v. Introduction of Congenital Disorders	
vi. Role of Physiotherapy Assistant in the management of heart diseases	
Total Teaching	60 hours
Weightage for Assessment	8%

Unit 8

Pre and Post-operative Care of Patient

Learning Focus	
i. Chest Physiotherapy	
• Breathing exercises and postural draining techniques	
• Management of pulmonary drain and other surgical drains	
ii. Post Operative Physiotherapy; Lobectomy, Pneumectomy	
iii. Deep Vein Thrombosis	
iv. Total Hip Replacement	
v. Total Knee Replacement	
vi. Physiotherapy for Pediatrics and Geriatrics	
Total Teaching	80 hours
Weightage for Assessment	11%

Unit 9

Cryotherapy/Hydrotherapy/Paraffin Baths Therapy

Learning Focus	
i. Cryotherapy, its effects and uses (Ice towels, Ice packs, Immersion, Ice-cube massage)	
ii. Hydrotherapy techniques, types of baths, effects and uses	
iii. Paraffin Baths; introduction, applications, effects and uses	
Total Teaching	40 hours
Weightage for Assessment	5%

Practical Attachment

The extensive internship will reinforce the classroom learning and enable the student to understand how to assist physiotherapist in execution of different treatment plans. It is this aspect of the course that will determine the level of professionalism they will display after employment. This period will be interspersed with learning of theory.

During the two years of this program the students will be placed in different sections on a roster basis to gain practical experience in relevant areas under supervision of trained physiotherapists. If some specialized section is not available in the teaching institution, it should arrange students' visit to a hospital where such facilities are available. The practical training should be augmented by audiovisual / CD exhibition of advanced physiotherapy facilities.

Students will maintain a record of their attachment in the 'Practical Note Books' (one for each section), the last portion of which would be designed as a 'Log Book' which shall be a work diary and record. Special mention shall be made of the procedures, if any, conducted by the candidate. This diary shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the practical /viva examination.

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