# CURRICULUM

# PROFICIENCY CERTIFICATE LEVEL IN MEDICAL SCIENCE

# (PHYSIOTHERAPY)

(Three-Year Programme – Yearly System)

Council for Technical Education and Vocational Training

**Curriculum Development and Equivalence Division**

Sanothimi, Bhaktapur

Development 2010

First Revision 2019

Second Revision 2025 (2082 BS)

**Effective From**

**The revised curriculum for the second and third years will be effective from the 2082/83 academic year intake.**

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## Introduction

Physiotherapy is an emerging field in the health service sector. It is a healthcare profession dedicated to enhancing and restoring physical function and mobility. This holistic approach not only aids in physical healing but also promotes overall wellbeing, empowering individuals to lead more active, independent lives. This curriculum is designed to produce middle level skilled physiotherapist equipped with sound knowledge, skills and attitudes. This field has been helping the societies and communities in fitness, treatment, habilitation and rehabilitation of various health conditions. It has been creating job opportunities both in public and private sectors as well as creating self-employment opportunities.

This course has been designed based on the tasks required to be performed by a physiotherapy assistant in variety of clinical and community settings. The program extends over three academic years. The first year course focuses on basic science and foundational subjects, the second year course focuses on theory and practical part of basic physiotherapy. Similarly, the third year comprises the disciplinary subjects and application of learned skills and knowledge in clinical and community settings.

## Rationale

Proficiency Certificate in Medical Science (Physiotherapy) curriculum was developed in 2010. The first revision was done in 2019 followed by second revision in 2025. The course has been renamed as **Proficiency Certificate Level in Medical Science (Physiotherapy)**. The rationales behind its revision are as follows:

- It crossed the 5 years of maturity period in its implementation and similarly the implementing agencies/technical schools/polytechnic institutes have requested to revise this curriculum based on their teaching experiences.
- The year-wise re-adjustments of the existing subjects are felt necessary.
- It is necessary to revisit the weightage of both theoretical and practical contents and marks to make it more practice-oriented.
- The course has been refined to meet the current needs in a broad area of practice.

Nepal is a disaster prone country with natural calamities. In addition, there are road traffic accidents and fall injuries adding to the disabilities. Globally, there is a rise in non-communicable diseases, aging population and disabilities increasing the demand of physiotherapy services. To cope with the national and international demands, the contents and the skills should be updated to make the skills relevant and pertinent to the health sector.

## Curriculum Title

Proficiency Certificate Level in Medical Science (Physiotherapy)

## Aim

The program aims to prepare middle level technical human resource for physiotherapy practice within clinical and community settings with diverse and vulnerable population in the country.

## Program Objectives

After the completion of this program, the graduates shall be able to:

- Apply the knowledge and skills of physiotherapy in different human health conditions in community and clinical settings.
- Demonstrate the professional competence, self-awareness, integrity, respect of individuals and clients, ethical and social responsibilities.
- Assist physiotherapists in patient assessment, treatment and rehabilitation procedures.
- Counsel patients for follow up, care and other health-related problems.
- Identify referral cases and refer.
- Work with multidisciplinary teams in various settings.

## Group Size

The group size will be maximum 40 students in a batch.

## Entry Criteria

- SLC Pass or SEE with minimum GPA 2.0 and graded in Compulsory Mathematics, English & Science.
- TSLC in related program with minimum 68.33%.
- Should pass entrance examination as administered by CTEVT.

## Course Duration

The total duration of this curricular program is three academic years. The program is based on the yearly system. Moreover, one academic year consists up to 35 weeks and one academic week consists up to 40 hours excluding evaluation period.

## Medium of Instruction

The medium of instruction will be English and/or Nepali.

## Pattern of Attendance

A minimum of 90% attendance in each subject is required to appear in the respective final examination.

## Teacher-to-Student Ratio

The ratio between teachers and students must be as follows:

- The overall teacher-to-student ratio must be 1:10 at the institution level.
- 1:40 for theory and tutorial classes
- 1:10 for practical classes
- 75% of the teachers must be full-time.

## Required Qualifications for Teachers and Instructors

- The program coordinator should have a master's degree in physiotherapy or a bachelor's degree in physiotherapy with a minimum of five years of experience in the related field.
- The foundational subject teacher should have a master's degree in the related subject.
- The disciplinary subject teacher should have a bachelor's degree in the relevant field.
- The disciplinary subject demonstrator should hold a PCL degree in physiotherapy.

All teachers and instructors should be registered with their respective professional councils.

## Instructional Media and Materials

The following instructional media and materials are suggested for the effective instruction and demonstration.

- ***Printed Media* and *Materials* (**assignment sheets, handouts, information sheets, individual training packets, performance checklists, textbooks, etc.).
- ***Non-Projected Media* and *Materials*** (display models, flipchart, poster, writing board, etc.).
- ***Projected Media* and *Materials*** (opaque projections, multimedia projector, slides, etc.).
- ***Audio-Visual Materials*** (audiotapes, slide-tape programmes, videos, etc.).
- ***Computer-Based Instructional Materials*** (computer-based training, interactive video, etc.).

## Teaching Learning Methodologies

The methods of teaching for this curricular program will be a combination of several approaches such as illustrated lecture, group discussion, demonstration, simulation, guided practice, fieldwork, block study, industrial practice, report writing, term paper presentation, experiment and other independent learning exercises.

**Theory:** Lecture, discussion, interaction, illustrated talks, assignment, group discussion, demonstration, group work.

**Practical:** Demonstration, observation, simulation, guided practice, self-practice, project work, field work, industrial practice, report writing, term paper presentation, experiment, etc.

## Medium of Instruction

The medium of instruction will be English, Nepali, or a combination of both.

## Evaluation Scheme

**a. Internal assessment**

- There will be written and practical exams for each subject both in theory and practical.
- Each subject will have 3 internal assessments in each year at regular intervals and students must be provided with feedback on their performance.
- Weightage of theory and practical marks are mentioned in course structure.
- Continuous assessment format will be developed and applied by the instructor for evaluating the student's performance.

**b. Final examination**

- Weightage of theory and practical marks are mentioned in the course structure.
- Students must pass both the theoretical and practical components of all subjects for certification. If a student fails any subject, s/he can take the re-examination administered by CTEVT.
- Students will be allowed to appear in the final examination only after completing the internal assessment requirements.

**c. Requirements for final practical examination**

- Professionals in the relevant subject must evaluate the final practical examinations.
- One evaluator in one setting can evaluate not more than 20 students.
- Practical examination should be administered in actual situation on relevant subject with the provision of at least one internal evaluator from the concerned institute led by external evaluator nominated by CTEVT.
- Provisions for re-examination will be as per the CTEVT policy.

**d. Final practicum evaluation will be based on:**

- Institutional practicum attendance - 10%
- Logbook/Practicum book maintenance - 10%
- Spot performance (assigned task/practicum performance/identification/arrangement preparation/measurement) - 40%
- Viva voce :
  - Internal examiner - 20%
  - External examiner - 20%

**e. Pass marks:**

- The students must secure minimum 40% marks in theory and 50% marks in practical. Moreover, the students must secure minimum pass marks in the internal assessment and in the semester final examination of each subject to pass the subject.

## Provision for Back Paper

Students will be allowed to take back papers; however, they must pass all subjects from all years within six years of their enrollment date. In addition, final-year students may take a chance exam as per CTEVT rules.

## Disciplinary and Ethical Requirements

- Intoxication, insubordination or rudeness to peers will result in immediate suspension followed by the review of the disciplinary review committee of the institute.
- Dishonesty in academic or practical activities will result in immediate suspension followed by administrative review, with the possibility of expulsion.
- Illicit drug use, bearing arms in the institute, threats or assaults to peers, faculty or staff will result in immediate suspension, followed by administrative review with the possibility of expulsion.

## Grading System

The following grading system will be adopted:

- Distinction: 80% and above
- First division: 65% to below 80%
- Second division: 50 % to below 65%
- Pass division: Pass marks to below 50%

## Certification and Degree Awards

- Students who have passed all the components of all subjects of 3 years are considered to have successfully completed the program.
- Students who have successfully completed the program will be awarded with a degree of **"Proficiency Certificate Level in Medical Science (Physiotherapy)"**.

## Question Patterns for Final Written Exam

The question patterns for the written exam are suggested as follows:

### A. For subjects with full marks 80

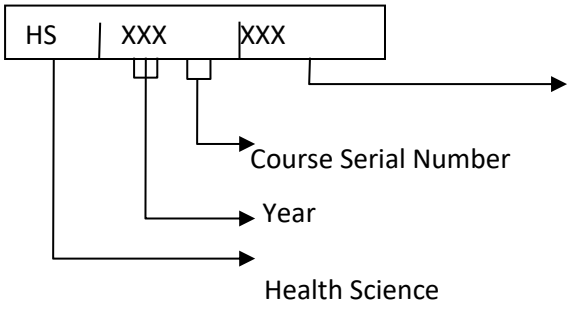
| S.N. | Type of question | No of Question | Weightage marks | Full marks | Time distribution | Optional questions |
|---|---|---|---|---|---|---|
| 1 | Long | 2 | 10 | 20 | 60 min | 1 |
| 2 | Short | 4 | 5 | 20 | 60 min | 2 |
| 3 | Very short | 10 | 2 | 20 | 40 min | 2 |
| 4 | Multiple | 20 | 1 | 20 | 20 min | |
| | Total | 36 | | 80 | 180 min | |

### B. For subjects with full marks 40

| | Type of question | No of Question | Weightage marks | Full marks | Time distribution | Optional questions |
|---|---|---|---|---|---|---|
| 1 | Long | 1 | 10 | 10 | 30 min | 1 |
| 2 | Short | 2 | 5 | 10 | 30 min | 1 |
| 3 | Very short | 5 | 2 | 10 | 20 min | 1 |
| | Multiple | 10 | 1 | 10 | 10 min | |
| | Total | 18 | | 40 | 90 min | |

## Subjects Codes

Each subject is coded with a unique number preceded and followed by certain letters as mentioned in the following figure:




**Offering Departments:**

- G.M: General Medicine(H.A.)
- P:Pharmacy
- LT:Certificate in Medical Lab Technology
- DR:Diagnostic Radiography
- OS:Ophthalmic science
- A: Ayurveda
- AAM: Acupuncture Acupressure and Moxibustion
- DP:Physiotherapy
- DH:Dental Hygienist
- YN:Yog and Naturopathy
- N:Nursing
- AP:Ayurveda Pharmacy
- DL:Dental Laboratory
- M:Midwifery

**Curriculum Structure**
**Year: II**

| S. N. | Course Code | Subject | Teaching Scheme | | | | | | Examination Scheme | | | | | | Total Marks | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mode | | | | Weekly Hours | Credit | Theory | | | Practical | | | | |
| | | | L | T | P | L /C | | | Assmt. Marks | Final | | Assm. Marks | Final | | | |
| | | | | | | | | | | Marks | Time (Hrs.) | | Marks | Time (Hrs.) | | |
| 1 | HS 201DP | Applied Anatomy & Physiology | 4 | 1 | | 2 | 7 | 5 | 20 | 80 | 3 | 30 | 20 | 1.5 | 150 | *continuous assessment |
| 2 | HS 202DP | Basics of Physiotherapy | 4 | | | 6 | 10 | 7 | 20 | 80 | 3 | 90 | 60 | 4 | 250 | |
| 3 | HS 203DP | Bio-mechanics | 2 | | | 2 | 4 | 3 | 10 | 40 | 1.5 | 30 | 20 | 1.5 | 100 | |
| 4 | HS 204DP | Pathology & Pharmacology | 3 | | | | 3 | 3 | 20 | 80 | 3 | - | - | - | 100 | |
| 5 | HS 205DP | Medicine & Surgery I (Ortho, Pediatric, Geriatrics) | 3 | | | 2 | 5 | 4 | 20 | 80 | 3 | 30 | 20 | 1.5 | 150 | |
| 6 | HS 206DP | Medicine & Surgery II (Neuro, Cardio, Women Health, First Aid) | 3 | | | 2 | 5 | 4 | 20 | 80 | 3 | 30 | 20 | 1.5 | 150 | |
| 7 | HS 207DP | Behavioral Science (Psychology and Sociology) | 2 | | | - | 2 | 2 | 10 | 40 | 1.5 | - | - | - | 50 | |
| 8 | HS 208DP | Rehabilitation and Disability Management | 2 | | | 2 | 4 | 3 | 10 | 40 | 1.5 | 30 | 20 | 1.5 | 100 | |
| | | **Total** | **23** | **1** | | **16** | **40** | **31** | **130** | **520** | | **240** | 160 | | **1050** | |

**Note:**
L – Lecture
T- Tutorial
P- Practical
L/C- Lab/Clinical

**Year: III**

| S. N. | Code No. | Subject | Teaching Scheme | | | | | | Examination Scheme | | | | | | Total Marks | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mode | | | | Weekly Hours | Credit | Theory | | | Practical | | | | |
| | | | L | T | P | L /C | | | Ass. Marks | Final | | Assm. Marks | Final | | | |
| | | | | | | | | | | Marks | Time (Hrs.) | | Marks | Time (Hrs.) | | |
| **Total Duration 11 Weeks** | | | | | | | | | | | | | | | | |
| 1 | HS 301DP | Physiotherapy in Medical & Surgical Conditions – I (Orthopedics, Pediatrics, Geriatrics) | 6 | 2 | | 6 | 14 | 3 | 10 | 40 | 1.5 | 30 | 20 | 1.5 | 100 | *continuous assessment |
| 2 | HS 302DP | Physiotherapy in Medical & Surgical Conditions – II (Neurology, Cardiopulmonary Women's Health) | 6 | 2 | | 6 | 14 | 3 | 10 | 40 | 1.5 | 30 | 20 | 1.5 | 100 | |
| 3 | HS 303DP | Rehabilitation and Healthcare Management | 9 | | | 3 | 12 | 4 | 20 | 80 | 3 | 30 | 20 | 1.5 | 150 | |
| | | Total | 21 | 4 | | 15 | 40 | 10 | 40 | 160 | | 90 | 60 | | 350 | |
| **Total Duration 20 Weeks** | | | | | | | | | | | | | | | | |
| | | | | | | | | | Health Facility Superviser Asssmt. Mark | | Institute Assmt. Mark | | Final Evaluation | | | |
| 4 | HS 304DP | Clinical Practicum (Hospital and Clinical Settings ) | | | | | 40 | 10 | 100 | | 100 | | 200 | 5 | 400 | |
| **Total Duration 4 Weeks** | | | | | | | | | | | | | | | | |
| 5 | HS 305DP | Comprehensive Community Physiotherapy | | | | | 40 | 2 | 50 | | 50 | | 100 | 3 | 200 | |
| | Total | | | | | | | 12 | | | | | | | 950 | |

# Master Plan

## Second Year

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Study Block | | | | | | | | | | | | | | | Basic physiotherapy | | | | | | BM+RD+MSI+MSII | | | | |
| 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| BM+RD+MSI +MSII | | | Vacation | | | | | | Study Block | | | | | | Revision | | | | | | | | Final exam | | |

## Third Year

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Study Block | | | | | | | | | | Physiotherapy Hospital/Clinical | | | | | | | | | | | | | | | |
| 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| Physiotherapy Hospital/Clinical | | | | Vacation | | | | | | | | Study Block | Community | | | | Revision | | | | | | Final exam | | |

Note:

BM=Bio-Mechanics
RD= Rehabilitation and Disability Management
MS1= Medicine Surgery I
MS2= Medicine Surgery II

# 2nd Year

# Applied Anatomy and Physiology

**Total: 7 hours/week**
**Lecture: 4 hours/week**
**Tutorial: 1 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 2 hours/week**

## Theory

**Course Description:**
This course provides knowledge about the normal structure and functions of the systems of human body. The students require an understanding of the normal structure and functions of the human body in order to be able to differentiate between the normal and abnormal pattern of structure and function which is essential in the treatment of patient. This course also provides in-depth knowledge of human movements, muscles responsible for movements and nerves related with them.

**Course Objectives:**
After the completion of this course, the students will be able to:

1. Describe the classifications of the systems of human body.
2. Locate and describe the structure and function of the components of each body system.
3. Explain the interrelationship of the body systems.
4. Transfer knowledge of anatomy and physiology to medical and surgical conditions.
5. Describe the importance of anatomy and physiology in context of physiotherapy.

**Course Contents:**

**Unit 1: General Introduction of Anatomy and Physiology** **1 hr**

- Define anatomy, physiology and their importance in physiotherapy.

**Unit 2: Musculoskeletal System** **40 hrs**

- Definition of bone, functions of bone, composition of bone
- Classification of bone: according to shape and size, regional classification, structural classification, on the basis of origin
- Describe bones of axial and appendicular skeleton.
- Explain the attachments, nerve supply and action of the major muscles of face and neck, spine, thoracic cage, abdominal wall, pelvic floor, upper and lower limbs.
- Define and classify joints (fibrous, cartilaginous, and synovial).
- Define and classify synovial joint and mention its functional characteristics (plane, hinge, pivot, condyloid, ellipsoid, saddle, ball & socket).
- Describe anatomical component (bone, ligament and muscles) and movements of shoulder joint, elbow joint, wrist joint, hip joint, knee joint, ankle joint.
- Define ossification and its types, bone growth and factors affecting it.
- Correlate clinical conditions (sprain, strain, fractures and dislocation).

**Unit 3: Muscle and Nerve Physiology** **12 hrs**

- Describe structure and function of muscle.
- Describe the mechanism of muscle contraction.
- Define neuron and its types. Mention its properties & function and nerve conduction.

- Describe membrane potential, action potential and its propagation.
- Describe neuromuscular transmission, degeneration and regeneration of nerve fibers.
- Define receptors, synapse & its characteristics and describe events at the chemical synapse.
- Describe reflex and functional components of the reflex arc.
- Describe types of reflex: superficial, deep, monosynaptic, polysynaptic
- Correlate clinical conditions (myasthenia gravis, muscular dystrophy and poliomyelitis).

**Unit 4: Nervous System** **15 hrs**

- Classify Nervous System.
- Describe briefly the structure and functions of Central Nervous System (CNS).
  - Brain (Cerebrum, Cerebellum, Basal ganglia, Pons, Thalamus, Hypothalamus, Medulla oblongata)
  - Spinal Cord and its tracts
- Describe formation, course and distribution of the following nerves:
  - Facial nerve
  - Trigeminal nerve
  - Brachial plexus
  - Lumbo-sacral plexus
- Describe course and distribution of the following Peripheral Nerves:
  - Ulnar nerve
  - Radial nerve
  - Median nerve
  - Musculo-cutaneous nerve
  - Axillary nerve
  - Sciatic nerve
  - Femoral nerve
  - Obturator nerve
  - Tibial Nerve
- Describe the Autonomic Nervous System (ANS).
  - Sympathetic Nervous System
  - Parasympathetic Nervous System
- Correlate clinical conditions (stroke, bell's palsy, Erb's palsy, wrist drop, claw hand, foot drop).

**Unit 5: Integumentary System** **2 hrs**

- Describe the characteristics of layer of skin (epidermis, dermis, subcutaneous tissue and epidermal appendages).
- Define gland, classify gland and describe the structure of sweat gland & sebaceous gland.
- Correlate clinical conditions (leprosy, psoriasis, alopecia, and ulcer).

**Unit 6: Cardiovascular System** **6 hrs**

- Describe the structure and function of heart, arteries, veins, arterioles, venues, and capillaries.
- Briefly describe the blood supply and nerve supply of heart.
- Describe the systemic and pulmonary circulation.
- Define ECG, ECHO, Heart sounds and its types.
- Describe cardiac output and BP regulation.
- Correlate clinical conditions (ASD, VSD, PDA, tetralogy of Fallot, ischemic heart disease).

**Unit 7: Respiratory System** **6hrs**

- Describe the mechanism of respiration.

- Describe the role of muscles associated with the mechanism of respiration.
- Describe pulmonary volume and capacities.
- Describe the gas exchange process.
- Describe nervous control of respiration.
- Correlate clinical conditions (asthma, chronic obstructive pulmonary disease, pneumonia).

**Unit 8: Exercise Physiology** **3 hrs**

- Describe the importance of exercise physiology.
- Enlist cardiovascular and respiratory changes during exercise.

**Unit 9: Endocrine System** **6 hrs**

- Describe the endocrine glands (Pituitary, Thyroid, Parathyroid, Adrenal and Pancreas-Islets of Langerhans).
- Enlist the hormones secreted by the endocrine glands and their functions.
- State the role of hypothalamus in regulating endocrine system.
- Define homeostasis, negative and positive feedback mechanism
- Correlate clinical conditions (hypothyroidism, hyperthyroidism, diabetes mellitus, dwarfism and gigantism, Grave's disease, Goitre, Cushing's syndrome, Addison's disease).

**Unit 10: Digestive System** **4 hrs**

- Enlist the functions of digestive organs and digestive glands.
- Correlate clinical conditions (appendicitis, gastritis, peptic ulcer and cholelithiasis, pancreatitis, Crohn's disease, hepatitis).

**Unit 11: Reproductive System** **4 hrs**

- Describe menstrual cycle and fertilization process.
- Describe the structure and function of breast.
- Functions of estrogen, progesterone, testosterone hormone.
- Correlate clinical conditions (dysmenorrhea, breast cancer, prostatomegaly, prostate cancer, uterine prolapse, cervix cancer).

**Unit 12: Urinary System** **4 hrs**

- Enlist physiological effects of urinary system.
- Function of urinary system in fluid and electrolyte balance.
- Describe micturition process.
- Correlate clinical conditions (urinary incontinence, nephrolithiasis and urinary tract infection, renal stone).

**Unit 13: Lymphatic Systems** **2 hrs**

- Describe lymphatic circulation.
- Correlate clinical condition (lymphedema).

**Final written exam marking scheme**

| Unit | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit hours | 2 | 40 | 18 | 20 | 4 | 8 | 8 | 4 | 8 | 8 | 8 | 8 | 4 | 140 |
| Marks | 1 | 22 | 10 | 11 | 2 | 5 | 5 | 2 | 5 | 5 | 5 | 5 | 2 | 80 |

## Tutorial

**Total: 35 Hours**

- Definition of bone, classification of bone and its diagram
- Definition and properties of skeletal, smooth and cardiac muscle
- Structure of skeletal muscle (sarcomere)
- Structure of fibrous, cartilaginous and synovial joints and their types
- Classification of Nervous system, location, structure and functions of cerebrum, cerebellum, Pons, Medulla, Thalamus, hypothalamus, Basal ganglia, ventricles, meninges
- Structure of neuron, synapse, and neuromuscular junction
- Structure and functions of skin
- Structure of heart and circulation within heart
- Structure and functions of organs of respiratory system
- Structure and functions of organs of digestive system
- Location, structure and functions of organs of endocrine system
- Structure and functions of male and female reproductive system
- Structure and functions of organs of urinary system
- Structure and functions of lymphatic organs

## Practical

**Total: 70 hours**

**Unit 1: Musculoskeletal System**

- Identify bones and its parts (Clavicle, Humerus, Radius, Ulna, Scapula, Hip bone, Femur, Tibia, Fibula, Vertebra, carpals, metacarpals, phalanges, sternum, ribs).
- Identify major muscles of the head, neck, thorax, spine and extremities.
- Identify the anatomical position of the bones in human body.
- Demonstrate movements of synovial joints.
- Demonstrate major muscles action (upper limbs, lower limbs, face, abdominal, spinal)
- Palpate and inspect the bony prominences of head, neck, thorax, spine and extremities.

**Unit 2: Anatomy of Internal Organs**

- Identify anatomical structures of lungs, heart, liver, pancreas, kidney, stomach, small and large intestine.
- Identify anatomical structures of brain and spinal cord.
- Identify anatomical structures of male and female reproductive system.
- Structure and functions of lymphatic organs

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# Basics of Physiotherapy

**Total: 10 hours/week**
**Lecture: 4 hours/week**
**Tutorial: 0 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 6 hours/week**

## Theory

**Course Description:**
This course provides both theoretical knowledge and practical skills to carry out therapeutic exercises programs. The course is designed to provide the student with knowledge and skills necessary to carry out comprehensive regional assessments along with the introduction of a variety of exercise techniques and exercise equipment.
This course also provides knowledge and skills of electrotherapy. This course is designed to develop basic knowledge about various types of electrotherapy modalities and to develop skills needed in electrotherapy.

**Course Objectives:**

After the completion of this course, the students will be able to:

1. Apply electrotherapy modalities in various conditions.
2. Describe pain and its types.
3. Carry out the assessment, record the findings, develop problem lists, goals and perform treatment.
4. Describe and demonstrate a wide variety of exercise techniques and their effects including modifications and progressions based on the patient's response to the techniques.
5. Prepare a plan for therapeutic exercise program for commonly encountered clinical conditions, including modifications, progression and home exercise programs.

**Course Contents:**

**Part A**

**Unit 1: Introduction to Therapeutic Exercise 8 hrs**

- Definition of therapeutic exercise
- Definition of key terms (balance, stability, coordination, endurance, mobility)
- Types of therapeutic exercises (aerobic exercises, range of motion exercises, stretching exercises, strengthening exercises, relaxation exercises, breathing exercises, balance and coordination exercises)

**Unit 2: Fundamental Position and Derived Position 8 hrs**

- Define fundamental and derived position.
- Describe various positions in Lying, Sitting, Standing, Kneeling and Hanging.

**Unit 3: Stretching 7 hrs**

- Define stretching, state principles and types of stretching (Active and passive).
- Define tightness, contracture, spasticity and flexibility.
- Describe goals, indications, contraindications and precautions of stretching.

**Unit 4: Strength Training** **8 hrs**

- Define Manual Muscle Testing (MMT), principles, and limitations.
- Define open and closed chain exercises.
- Types of Strength Training (Manual and Mechanical)

**Unit 5: Mat Exercise** **10 hrs**

- Rolling, Bridging, Forearm support side lying, Prone lying with forearm support, sitting on the side of mat/bed, Hitching & Hiking, cat and camel exercises
- Describe transfer activities (Side lying, Prone, Quadruped, Kneeling, Half kneeling, Side sitting, Sitting, Standing).

**Unit 6: Balance and Coordination Exercise** **10 hrs**

- Balance and its types (Static and Dynamic)
- Exercises to improve balance (Single leg standing and Balance board exercises)
- Exercises to improve coordination (Frenkel's Exercise)

**Unit 7: Posture** **6 hrs**

- Explain the corrective exercise (Kyphosis, lordosis, scoliosis)

**Unit 8: Breathing Exercises** **6 hrs**

- Define breathing exercise, describe its types (Diaphragmatic, Segmental, pursed lip, glossopharyngeal), techniques and effects.
- Describe Coughing and Huffing.

**Unit 9: Therapeutic Massage** **8 hrs**

- Define massage and its types (Stroking, Effleurage, Kneading, Hacking, Pounding, Vibration, and Friction).
- Describe physiological and therapeutic effects of massage.
- Enlist indication and contraindication of massage.

**Unit 10: Hydrotherapy/ Aqua Therapy** **3 hrs**

- Define Hydrotherapy/Aquatherapy.
- Enlist its indications and contraindications.
- Explain the effects, merits and demerits of hydrotherapy/ aqua therapy.

**Unit 11: Exercise for Hand Function** **4 hrs**

- Explain Grip: Power, Spherical, Hook, Lateral prehension, Pinch.
- Exercise for hand function (flexibility and strength)

**Unit 12: Suspension Therapy** **3 hrs**

- Explain suspension therapy.
- Enlist its indications and contraindications.
- Describe types, uses, merits and demerits of suspension therapy.

**Unit 13: Relaxation** **4 hrs**

- Define relaxation and its types.
- Describe indication and techniques of general & local relaxation.

**Unit 14: Yoga** **2 hrs**

- Definition of yoga
- Benefits of yoga (physical, mental, health effects)

**Unit 15: Group Exercise and Home Exercise** **3 hrs**

- Explain group and home exercises.
- Advantage and disadvantage of group and home exercise

## Part B

**Unit 16: Basic of Electrotherapy** **5 hrs**

- Define Ions, Ionization, Current - Direct and Alternative current.
- Explain Conduction and Induction of current.
- Identify and describe the uses of Power sockets, switches and plugs.
- Electric Shock: Definition, Classification and Management
- Therapeutic current: Definition and Uses.
- Electrotherapy: Definition and classification of electrotherapy with examples

**Unit 17: Pain Mechanism** **3 hrs**

- Definition and types of pain
- Definition and mechanism of pain gate theory

**Unit 18: High Frequency Current** **4 hrs**

- Definition, indication, contraindication, therapeutic effects and techniques of application of Microwave Diathermy (MWD)
- Definition, indication, contraindication, therapeutic effects techniques of application of Infra-red Radiation (IRR)

**Unit 19: Ultrasound Therapy (UST).** **4 hrs**

- Definition, indication, contraindication, therapeutic effects and techniques of application of UST

**Unit 20: Medium Frequency Current** **3 hrs**

- Interferential Therapy (IFT)
  - Definition of IFT
  - Explain indication, contraindication and application of IFT

**Unit 21: Low Frequency Current** **5 hrs**

- Definition, indication, contraindication, effects and techniques of application of faradic current.
- Definition, indication, contraindication, effects and techniques of application of galvanic current.
- Definition and uses of Faradic-galvanic test.

**Unit 22: Motor Points** **2 hrs**

- Define motor point.
- Enlist the motor points of Upper Limb, Lower Limb and Face in a diagram.

**Unit 23: Faradic Foot Bath** **2 hrs**

- Explain Faradic foot bath, indication, contraindication and its application.

**Unit 24: Faradism under Pressure** **2 hrs**

- Explain Faradism under pressure, indication, contraindication and its application.

**Unit 25: Transcutaneous Electric Nerve Stimulation (TENS)** **4 hrs**

- Define and enlist types of TENS.
- Explain indication, contraindication and application of TENS.

**Unit 26: Paraffin Wax Bath** **2 hrs**

- Define Paraffin Wax Bath.
- Explain indication, contraindication and application of paraffin wax bath.

**Unit 27: Hot Packs** **2 hrs**

- Define hot packs and classify the types of hot packs.
- Explain indication, contraindication and application of hot packs.

**Unit 28: Cryotherapy** **3 hrs**

- Define Cryotherapy and enlist type of Cryotherapy modalities.
- Explain indication, contraindication and application of Cryotherapy.

**Unit 29: Traction** **5 hrs**

- Define Traction, classify types of traction.
- Explain indication, contraindication and application of traction.
- Explain therapeutic uses of cervical and lumbar traction.

**Unit 30: Light Amplification by Stimulated Emission of Radiation (LASER)** **2 hrs**

- LASER: Definition, Indication and contraindication

**Unit 31: Contrast Bath** **1 hr**

- Contrast Bath: Definition, Indication and contraindication

**Unit 32: Combination Therapy** **1 hr**

- Define Combination Therapy.
- Enlist its uses with examples.

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | 4 | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Unit hours** | 8 | 8 | 7 | 8 | 10 | 10 | 6 | 6 | 8 | 3 | 4 | 3 | 4 | 2 | 3 | 5 | 3 | 4 | 4 |
| **Marks** | 4.5 | 4.5 | 4 | 4.5 | 6 | 6 | 3 | 3 | 4.5 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 |

| **Unit** | **20** | **21** | 22 | 23 | 24 | **25** | **26** | **27** | **28** | **29** | **30** | **31** | **32** | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Unit hours** | 3 | 5 | 2 | 2 | 2 | 4 | 2 | 2 | 3 | 5 | 2 | 1 | 1 | 140 |
| **Marks** | 2 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 80 |

# Practical

**Total: 210 hrs**

**Part A** **140 hrs**

- Demonstrate various positions: Lying, Sitting, Standing, Kneeling and Hanging.
- Perform stretching (Active, Passive and self).
- Perform soft tissue stretching techniques of the following muscles: Sternocleidomastoid, Pectoralis, Biceps brachii, long flexors/Extensors of wrist and fingers, Iliopsoas, Hamstring, Quadriceps, Iliotibial band, Tendo-Achilles tendon.
- Assess muscle strength (MMT of group muscles of shoulder, elbow, wrist, hip, knee, ankle joints).
- Demonstrate Open and Closed Chain Exercises.
- Demonstrate strength training (Manual and Mechanical-using weight cuffs, dumbbells).
- Perform Mat Exercise- Rolling, Bridging, Forearm support side lying, Prone lying with forearm support, sitting on the side of mat/bed, Hitching & Hiking.
- Perform Transfer activities (Side lying, Prone, Quadrupled positioning, Kneeling, Half kneeling, Side sitting, Sitting, Standing).
- Demonstrate Static and dynamic balance Exercise (Single leg standing and Balance board).
- Perform Frenkel's Exercise.
- Demonstrate the corrective exercise (Scoliosis, kyphosis, lordosis).
- Demonstrate Diaphragmatic, Segmental, pursed lip and glossopharyngeal breathing techniques.
- Perform Coughing and Huffing.
- Perform Chest mobility exercises.
- Perform techniques of massage (Stroking, Effleurage, Kneading, Hacking, Pounding and Friction) – Back, Upper and Lower Limb, Face.
- Perform reeducation and strengthening of muscle using water.
- Demonstrate Grip-Power, Spherical, Hook, Lateral prehensile, Pinch grip.
- Perform exercise to improve hand function (flexibility and strength).
- Demonstrate relaxation technique (Jacobson's technique).
- Perform hand grip exercises.

**Part B** **70 hrs**

- Application of MWD, IRR, UST, TENS and IFT
- Stimulate the denervated and innervated muscles with Faradic and Galvanic current.
- Apply faradic foot bath and faradism under pressure.
- Apply Paraffin Wax Bath.
- Apply hot pack in different forms.
- Apply ice/cold pack in different forms.
- Apply Lumbar and Cervical Traction.
- Apply combination therapy.

**References:**


- Gardiner, D. (2007). *The principles of exercise therapy* (4th ed.). CBS Publishers & Distributors.
- Hollis, M., & Fletcher-Cook, P. (Eds.). (1999). *Practical exercise therapy* (4th ed.). Wiley Blackwell.
- Kisner, C., Borstad, J., & Colby, L. A. (2022). *Therapeutic exercise: Foundation and techniques* (8th ed.). F. A. Davis Company.
- Conroy, V. M., Murray, B. N., Jr., Alexopulos, Q. T., & McCreary, J. (2024). Kendall's muscle *testing and function with posture and pain* (6th ed.). Wolters Kluwer.
- Sinha, A. G. (2010). *Principles and practice of therapeutic massage* (2nd ed.). Jaypee Brothers Medical Publishers.
- Patel, N. (2008). *Yoga and rehabilitation.* Jaypee Brothers Medical Publishers.
- Singh, J. (2017). *Textbook of electrotherapy* (3rd ed.). Jaypee Brothers Medical Publishers.
- Forster, A. & Palastanga, N. (2005). *Clayton's electrotherapy: Theory and practice* (8th ed.). CBS publishrs & Distributers.
- Khatri, S. M. (2012). *Basics of electrotherapy* (2nd ed.). Jaypee Brothers Medical Publishers.
- Robertson, V., Ward, A., Low, J. & Reed, A. (2006). *Electrotherapy explained: Principles and practice* (4th ed.). Elsevier.
- Nanda, B. K. (2014). *Electrotherapy simplified* (2nd ed.). Jaypee Brothers Medical Publishers.

# Biomechanics

**Total: 4 hours/week**
**Lecture: 2 hours/week**
**Tutorial: 0 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 2 hours/week**

## Theory

**Course Description:**

This course will enable the students to comprehend the basics of biomechanics and their application in physiotherapy for the restoration of physical function.

**Course Objectives:**

After the completion of this course, the students will be able to:

1. Define biomechanics and its principles in relation to human body.
2. Use equipment/tools in the physiotherapy gymnasium.
3. Assess the range of motion using goniometer of major joints of upper and lower extremities.
4. Identify and use different walking aids.
5. Explain gait and its phases.
6. Analyze posture in different views.

**Course Contents:**

**Unit 1: Introduction** **2 hrs.**

- Define Biomechanics and its importance.
- Define Kinesiology and its importance.

**Unit 2: Mechanics and Mechanical Principles** **10 hrs.**

- Define mechanics, forces, classification of forces and forces acting on human body.
- Define and describe
  - Momentum, Torque, Friction, Pivot, Angle of pull
  - Base of support, Equilibrium
  - Energy, Work, Power
  - Muscle contraction isotonic (concentric and eccentric) and isometric
  - Action of muscles- agonist, antagonist and synergist
  - Define Elasticity and plasticity, explain Hooke's law
  - Stress and Strain curve

**Unit 3: Biomechanics Applied in Human Body** **10 hrs**

- Explain gravity, line of gravity, centre of gravity and base of support in general and human body.
- Explain axis and plane of joint movement in human body.
- Explain lever and its types, mechanical advantage and pulleys in general and human body.

**Unit 4: Joint Movements** **12 hrs**

- Define joint movement (Active and Passive movement)
- Active movements (Free, Assisted and Resisted)
- Passive movements (Manual and Mechanical)
- Indications and contraindications of active and passive movements

**Unit 5: Goniometer** **5 hrs**

- Define Goniometer and its types.
- State the uses and limitation of Goniometer
- Mention the range of motion (ROM) of the following joints- cervical, shoulder, elbow, wrist, hip, knee, ankle joint

**Unit 6: Posture and Gait** **15 hrs**

- Define posture, ideal posture, Good and bad postures
- Explain types of posture (active and inactive)
- Postural mechanism
- Define gait, and describe its phases (Stance and Swing)
- Causes of gait disorders/disturbances:
  - Musculoskeletal causes: Trendelenburg gait, Waddling gait
  - Limb length discrepancy
  - Neurological involvement : Ataxic gait, Parkinson's gait, Hemiplegic gait, Scissoring gait
  - Pain: Antalgic gait.

**Unit 7: Ergonomics** **2 hrs**

- Define ergonomics and work ergonomics.

**Unit 8: Walking Aids** **6hrs**

- Define different walking aids.
- Describe uses and structure of the following:
  - Crutches - axillary, elbow, gutter
  - Sticks/cane - standard, tripod, quad cane
  - Walker/Walking frame- With wheels, without wheels
  - Wheelchair
- Crutch and wheelchair measurement
- Walking pattern using crutches (Two, three and four point gait), Swing to and swing through Gait

**Unit 9: Therapeutic Tools** **5 hrs**

- List the uses of the following tools:
  - Shoulder wheel
  - Finger ladder
  - Shoulder pulley
  - Supinator/pronator instrument
  - Ankle exerciser
  - Grip strengtheners (Thera-putty, Exercise ball, Hand Exerciser)
  - Parallel bars
  - Balance board
  - Weights-Cuffs and Dumb bell
  - Thera band and Thera tubes
  - Physio ball
  - Tilt table
  - Static bicycle

**Unit 10: Gymnasium** **3hrs**

- Explain gymnasium, setting up, equipment and its uses.

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | 4 | **5** | **6** | **7** | **8** | **9** | **10** | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Unit hours** | 2 | 10 | 10 | 12 | 5 | 15 | 2 | 6 | 5 | 3 | 70 |
| **Marks** | 1 | 6 | 6 | 7 | 3 | 8 | 1 | 3 | 3 | 2 | 40 |

## Practical

**Total: 70 Hours**

- Demonstrate active and passive movement of various joints.
- Perform active movements (Free, Assisted and Resisted).
- Perform passive movements (Manual and Mechanical).
- Demonstrate Isometric and Isotonic.
- Measure the range of motion (ROM) of the following joints:
  - Upper extremities - shoulder, elbow and wrist
  - Lower extremities - hip, knee and ankle
  - Spine: Cervical
- Perform the use of therapeutic tools:
  - Shoulder wheel, Finger ladder, Shoulder pulley
  - Supinator/pronator instrument, Ankle exerciser
  - Grip strengtheners (Thera-putty, Exercise ball, Hand Exerciser)
  - Parallel bar and staircase training
  - Balance board
  - Weights-Cuffs and Dumbbell's
  - TheraBand and Thera tubes
  - Physio ball
  - Tilt table
  - Static bicycle
- Identify the gymnasium equipment.
- Demonstrate the use of walking aids: axillary crutch, elbow crutch, gutter crutch, cane/stick (standard, tripod, quadripod), walker/walking frame and wheelchair.
- Take measurement of the following:
  - Crutches - axillary and elbow
  - Wheelchair
- Analyze posture from different viewpoints:
  - Anterior
  - Posterior view
  - Lateral view - left and right
- Demonstrate good and bad posture in different fundamental positions.
- Demonstrate normal gait. Assess phases of gait-Stance and Swing.
- Demonstrate different types of pathological gait- Trendelenburg, Hemiplegic, Antalgic, Festinating, Waddling, High stepping gait, scissoring gait.
- Demonstrate the different types of gait using walking aids:
  - Two Points Gait
  - Three Point Gait
  - Four Point Gait
  - Swing to and swing through Gait

**References:**


1. Lippert, L. S. (2000). *Clinical kinesiology for physical therapist assistant* (3rd ed.). F a Davis Co.
2. Levangie, P. K., & Norkin, C. C. (2011). *Joint structure and function: A comprehensive analysis* (5th ed.). F. A. Davis Company.
3. Gardiner, D. (2023). *The principles of exercise therapy* (4th ed.). CBS Publishers & Distributers.

# Pathology and Pharmacology

**Total: 3 hours/week**
**Lecture: 3 hours/week**
**Tutorial: 0 hours/week**
**Lab/Clinical: 0 hours/week**

## Theory

**Course Description:**
This course provides an essential foundation in pathology and pharmacology. It integrates the principles of disease processes (pathology) and the use of medications (pharmacology) to equip students with the knowledge necessary to support patient care and rehabilitation.

**Course Objectives:**
After the completion of this course, the student will be able to:

1. Describe the process of inflammation, repair and healing.
2. Recognize the etiology, pathogenesis, and clinical manifestations of common diseases affecting various body systems.
3. Differentiate between benign and malignant tumors and describe the basics of carcinogenesis.
4. Describe microorganisms and their structure.
5. Describe mode of infection and prevention of medically important intestinal parasites.
6. Explain defense mechanism of body.
7. Describe formation and function of blood.
8. Describe the structure and function of biomolecules, including carbohydrates, proteins, lipids, and nucleic acids.
9. Describe the therapeutic uses, side effects, and contraindications of commonly prescribed medications
10. Describe the sources, uses and side effects of vitamins.

**Course Contents:**

**Part 1: Pathology**

**Unit 1: Basic Pathology** **15 hrs**

- Introduction to Pathology
  - Define pathology.
  - Scope of pathology
- Inflammation
  - Define inflammation.
  - Describe inflammatory process including physical, chemical and biological causes.
- Infection
  - Define infection and its types.
  - Explain the source of infection.
  - Explain differences between infection and inflammation.
- Wound
  - Define and classify wound.
  - Describe stages of wound healing.
- Ulcers
  - Define and classify ulcers.

- Describe stages of ulcer healing.

- Gangrene
  - Define and classify Gangrene.
  - Causes of Gangrene.
- Neoplasm
  - Define and classify Neoplasm.
  - Difference between benign and malignant tumor.

**Unit 2: Medical Microbiology** **15 hrs**

- Describe morphological classification of Bacteria, Parasites, Viruses and Fungi.
- Distinguish between the features of Gram-positive and Gram-negative bacteria.
- Enlist the Normal Bacterial Flora in human body.
- Enlist the microorganisms causing diseases in human.
- Explain the methods of basic bacteriological investigations (Gram's stain, AFB stain, culture media, identification techniques and sensitivity testing methods).
- Explain bacterial growth process and factors influencing it.
- Define sterilization and explain various methods of sterilization.
- Define Immunity, Antigen, Antibodies and antigen-antibody reaction.
- Define virus and explain its properties.

**Unit 3: Medical Parasitology** **12 hrs**

- Define parasite, host, host parasite relations.
- Describe modes of infection, pathogenicity and prevention of medically important intestinal parasites prevalent in Nepal (Ascaris, Hookworm, Trichuris, Taenia, Entamoeba and Giardia lamblia).
- Describe modes of infection, pathogenicity, and prevention of medically, important blood and tissue parasites found in Nepal (Plasmodium, Leishmania, Wuchereria).

**Unit 4: Haematology** **5 hrs**

- Describe Hematopoiesis (Erythropoiesis, Leucopoiesis, and Thrombopoiesis).
- Define anticoagulants, their types and uses.
- Describe different methods of blood collection.
- Describe the structure, functions and estimation of hemoglobin (Sahli’s Acid Hematin and Cyanmethemoglobin method).
- Introduction about blood banking, ABO and Rh blood grouping.

**Unit 5: Biochemistry** **5 hrs**

- Define and classify carbohydrate, lipid, protein and enzymes.
- Define metabolism, anabolism and catabolism.
- Define glycolysis, gluconeogenesis, Krebs's cycle and urea cycle.
- Enlist normal value of Liver Function Test (LFT), Renal Function Test (RFT), Sugar and Lipid profile

**Part 2: Pharmacology**

**Unit 6: Terminology and Definition** **8 hrs**

- Define: Pharmacology, Pharmacy, Drug, Pharmacodynamics, and Pharmacokinetics
- Discuss Adverse Reactions, Dose, Indication, Contraindication, Preparation, Dispensing

- Enumerate the routes of drug administration and identify the factors effecting drug action.
- Define local dosage form-Ointment and spray.
- Explain with examples the importance of expiry date and self-life of drug.
- Explain the prescription and its parts.

**Unit 7: Analgesic, Antipyretic and Anti-Inflammatory Drugs 3 hrs**

- Define analgesic, anti-inflammatory and antipyretics with examples.
- Enlist the indications, common adverse effects and contraindications of commonly used Non-Steroidal Anti Inflammatory Drugs (NSAID's).

**Unit 8: Drugs Used in Common Respiratory Problems 5 hrs**

- Define cough and classify the drugs used for it (Anti-tussive, Expectorants, and Bronchodilators).
- Enlist the indication, common side effects and contraindications of Ephedrine, Aminophylline, Salbutamol and Chlorpheniramine.

**Unit 9: Drugs Used in Common Cardiovascular Problems 5 hrs**

- Define: antihypertensives and diuretics.
- Enlist the uses and side effects of hydrochlorothiazide, furosemide, amlodipine, Enalapril, Propranolol.

**Unit 10: Drugs Used in Common Nervous System Problems 6 hrs**

- Define sedative, hypnotic, tranquilizer, antidepressant's, anticonvulsant, antiepileptic, opioid analgesics and drug dependence with examples of drugs causing dependence.
- Enlist uses and common side effects of phenobarbitone, phenytoin diazepam, amitriptyline, morphine.

**Unit 11: Drugs Used for Treatment of Infections and Infestations 8 hrs**

- Define antibiotic and its classification, chemotherapeutic agent, antitubercular, antileprotic, anthelmintic, antiamoebic.
- Enlist uses and side effects of penicillin, cephalosporins, azithromycin, co-trimoxazole, streptomycin, metronidazole, tinidazole.

**Unit 12: Drugs Used Locally 6 hrs**

- Define: local anesthetic, soothing agent, antifungal, antiseptic, disinfectant, and vasoconstrictor.
- Enlist uses and side effects of: lignocaine, zinc oxide, salicylic acid, benzoic acid, methyl salicylate, iodine, acriflavine, potassium permanganate, chlorhexidine, benzyl benzoate, adrenaline and Sulphur, gamma benzene hexachloride.

**Unit 13: Vaccines and Antisera 6 hrs**

- Define: active and passive immunizations, vaccine, toxoid, and antisera.
- Enlist the various uses and adverse effects of BCG, DPT, Cholera vaccine, Polio vaccine, TAB vaccine, Anti Rabies vaccine, Tetanus toxoid, Measles vaccine, Tetanus antitoxin, Diphtheria antitoxin and Anti-snake venom serum.

**Unit 14: Nutritional Supplements 4 hrs**

- Define vitamin, minerals, deficiency problems and nutrition supplement.
- Enlist the sources and uses of vitamins A, B, C, D, E, K, Iron and calcium.

**Unit 15: Drug Dependency and Drug Addiction** **2 hrs**

- Definition - drug dependency and drug abuse.
- Classification of addictive drugs.

**Final Written Exam Marking Scheme**

| Unit | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit hours | 15 | 15 | 12 | 5 | 5 | 8 | 3 | 5 | 5 | 6 | 8 | 6 | 6 | 4 | 2 | 105 |
| Marks | 11 | 11 | 9 | 4 | 4 | 6 | 2 | 4 | 4 | 5 | 6 | 5 | 5 | 3 | 1 | 80 |

**References:**


1. Baveja, C. P. (2019). *Textbook of microbiology* (6th ed.). Arya Publications.
2. Singh, T. (2016). *Textbook of hematology* (3rd ed.). Arya Publications.
3. Gupte, S. (2010). *The short textbook of medical microbiology* (10th ed.). Jaypee Brothers Medical Publishers.
4. Parija, S. C. (2016). *Textbook of microbiology and immunology* (3rd ed.). Elsevier.
5. Narayanan, A. (2007). *Textbook of microbiology* (7th ed.). Orient Longman.
6. Chakraborty, P. (2013). *A textbook of microbiology* (3rd ed.). New Central Book Pvt. Ltd.
7. Ramesh, K. V., & Shenoy, K. A. (2005). *Pharmacology for physiotherapist* (1st ed.). Jaypee Brothers Medical Publishers.
8. Udaykumar, P. (2017). *Textbook of pharmacology for physiotherapy students* (3rd ed.). Jaypee Brothers Medical Publishers.
9. Tripathi, K. D. (2018). *Essentials of medical pharmacology* (8th ed.). Jaypee Brothers Medical Publishers.
10. Udaykumar, P. (2012). *Medical pharmacology* (4th ed.). CBS Publishers.

# Medicine and Surgery I

# (Orthopedics, Pediatrics, Geriatrics)

**Total: 5 hours/week**
**Lecture: 3 hours/week**
**Tutorial: 0 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 2 hours/week**

## Theory

**Course Description:**
This course includes the study of different conditions of various medical and surgical disciplines that are relevant to the physiotherapy practice. The course includes an introduction to the conditions, causes and management of general medical and surgical conditions related to orthopedics, pediatrics, and geriatrics.

**Course Objectives:**

After the completion of this course, the students will be able to:

1. Define different medical and surgical conditions.
2. Describe the etiology, signs, and symptoms of different conditions.
3. Describe medical and surgical management of different conditions.

**Course Contents**
**Unit 1: Orthopedic Conditions**

- Definition of etiology, signs & symptoms, medical and surgical management of the following conditions:
  - Congenital anomalies — 5 hrs
    - Congenital Talipes Equino Varus (CTEV)
    - Congenital Dislocation of Hip (CDH)
    - Torticollis
  - Bone infections — 3 hrs
    - Osteomyelitis (Mode of spread, Classification)
    - Pott's Spine (Incidence and Anatomy)
  - Arthritis — 5 hrs
    - Osteoarthritis (Types: Primary and Secondary)
    - Rheumatoid arthritis (Incidence, Criteria for Diagnosis)
    - Difference between O.A and R.A
    - Ankylosing spondylitis
  - Spinal deformities — 4 hrs
    - Kyphotic (Types-Round and Angular)
    - Lordotic
    - Scoliosis (Classification- Structural and Non-Structural)
  - Bone, muscle and joints disorders — 10 hrs
    - Rickets, Osteomalacia

- Genu- valgum, varum, recurvatum
- Plantar fasciitis, Calcaneal Spur, Flat foot
- Cervical Spondylosis, Lumbar Spondylosis
- Spondylolisthesis (Types)
- Prolapsed Inter-Vertebral Disc (PIVD)
- Frozen shoulder, rotator cuff injury

➢ Fractures 4 hrs
- Definition and types of fracture
- Clinical sign of fracture
- Stages of fracture healing
- Complications of fracture (cross-union, non-union, delayed-union, mal-union, myositis ossificans, Volkmann's ischemic contracture, compartment syndrome)
- Fracture management

➢ Common fractures of upper limb 8 hrs
- Clavicle
- Shaft & condylar fracture of humerus
- Olecranon process and shaft of the Ulna
- Head and shaft of radius
- Colle's fracture
- Carpals, metacarpals and phalanges fracture

➢ Common fractures Lower limbs 8 hrs
- Neck of Femur
- Shaft and condylar fracture of femur
- Patella fracture
- Condylar and shaft fracture tibia
- Shaft of fibula fracture
- Malleolar fractures

➢ Common fractures of Vertebra and ribs 4 hrs
- Compression fracture
- Burst fracture
- Ribs

➢ Dislocation of Joint 4 hrs
- Shoulder, Elbow, Hip and Knee

➢ Amputations
- Indications and level 6 hrs
- Types of amputations
- Common sites of amputation in upper limb and lower limb
- Stump management

➢ Soft tissue injuries 6 hrs
- Sprain and strain (Grades)
- Inflammation (types)
- Bursitis
- Tendinitis: tennis elbow, golfer's elbow, Dequervain's tenosynovitis
- Carpal tunnel syndrome

- Peripheral Nerve Injury: Definition, Seddon's Classification and its management. 6 hrs

**Unit 2: Pediatric** 22 hrs

- Normal Developmental Milestones

- Define Primitive reflex patterns.
- Definition, causes, classification, complications, clinical manifestations and management of Cerebral Palsy (CP), Spina bifida, Hydrocephalus.
- Define Muscular Dystrophy and describe Duchenne Muscular dystrophy.
- Definition and Typical clinical manifestation - Down's syndrome, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder, and Specific Learning disability.
- Define congenital heart diseases. Enlist common congenital heart diseases with Basic sign and symptoms: Atrial Septal Defect (ASD), Ventricular Septal Defect (VSD), Patent ductus arteriosus (PDA) and Tetralogy of Fallot's (TOF).

**Unit 3: Geriatric** 10 hrs

- Define ageing and its principles.
- Define fall and describe fall prevention strategies.
- Define dementia and Alzheimer's disease.
- List common mental health issues in elderly population.
- Define Osteoporosis, its causes and effects on elderly population.

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | **Total** |
|---|---|---|---|---|
| **Unit hours** | 73 | 22 | 10 | 105 |
| **Marks** | 55 | 17 | 8 | 80 |

## Practical

**Total: 70 Hours**

- Perform first aid techniques (wound dressing).
- Perform bandaging and taping.
- Perform splinting.
- Clinical observation at orthopedic department in a hospital and rehabilitation center
- Clinical observation at pediatric hospital and special schools
- Clinical observation at old age home/wellness clinic

**References:**


- Davidsion's, *Principles and Practice of Medicine* (4th edition, ELBS-Livingstone publications; 2014).
- John Ebnezer, *Textbook of Orthopedics* (5th edition, Jaypee publications; 2016).
- Maheshwori and Mhaskar, *Essential Orthopedics* (5th edition, Jaypee brothers; 2015).
- Vinod K Paul, *Essential Pediatrics* (9th edition, CBS Publishers & Distributors; 2018).

# Medicine and Surgery II

## (Neurology, Cardiorespiratory, Women's Health, First Aid)

**Total: 5 hours/week**
**Lecture: 3 hours/week**
**Tutorial: 0 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 2 hours/week**

## Theory

**Course Description:**

This course includes the study of different conditions of various medical and surgical conditions that are relevant to the physiotherapy practice. The course includes an introduction to the conditions, causes and management of general medical and surgical conditions, neurological, cardiopulmonary and women's health, and first aid.

**Course Objectives:**

After the completion of this course, the students will be able to:

1. Define different medical and surgical conditions.
2. Describe the etiology, signs & symptoms of different conditions.
3. Describe medical and surgical management of different conditions.

**Unit 1: General Medical and Surgical Conditions** **18 hrs**

- Poisoning: Clinical features, general management, common agents in poisoning, pharmaceutical agents, drugs of misuse, chemical pesticides, Envenomation
- Edema: Definition, causes, types and management.
- Diabetes: Definition, types, risk factors, complications and management
- Define plastic surgery and mention different types of grafts. Mention the medical and surgical management.
- Leprosy: Define leprosy, mention the types, clinical features, medical and surgical management of leprosy.
- Vertigo: Definition, types and medical management.
- Burn: Define burn, types of burn, rule of nine, medical and surgical management

**Unit 2: Neurological Conditions** **30 hrs**

- Describe etiology, signs & symptoms and medical and surgical management of the following neurological conditions.
    - Cerebro-Vascular Accident (CVA)- Types
    - Traumatic Brain Injury (TBI)
    - Spinal Cord Injury (SCI)- ASIA scale
    - Multiple Sclerosis
    - Poliomyelitis
    - Encephalitis
    - Parkinsonism
    - Meningitis

- Epilepsy and seizures
- Gullian Barre Syndrome
- Bell's palsy and Facial palsy
- Brain tumors: types

**Unit 3: Cardiopulmonary Conditions** **25 hrs**

- Describe etiology, signs & symptoms and medical and surgical management of the following cardio pulmonary conditions.
    - Chronic Obstructive Pulmonary Disease (COPD)
    - Pneumonia
    - Asthma
    - Pleural effusion
    - Pneumothorax
    - Pulmonary Tuberculosis
    - Coronary artery disease (Myocardial Infraction)
    - Hypertension and hypotension
    - Deep Vein Thrombosis (DVT)
    - Atherosclerosis
    - Embolism
    - Varicose vein

- Describe surgical procedures: Pneumonectomy, Lobectomy, thoracotomy, Percutaneous coronary intervention (PCI), Coronary artery bypass graft (CABG), mastectomy, laparotomy

**Unit 4: Women's Health** **12 hrs**

- Anatomy of Pelvic Floor Muscles
- Menstrual cycle and its disorders (Dysmenorrhea and Amenorrhea): Definition, causes, clinical features and management.
- Enlist physiological changes during pregnancy
- List the musculoskeletal disorders during pregnancy, delivery and postpartum
- Define, types, causes, assessment and management of Incontinence.
- Define, causes, signs and symptoms and management of Uterine Prolapse, Cervix and Breast cancer

**Unit 5: First Aid** **20 hrs**

- Introduce first aid, scope and principle, management on the site and make decision for referral and management during transfer.
- Define vital signs and normal values.
- Define shock, list the causes of shock, and identify first aid measures in shock.
- Identify first aid measures in cases of poisoning (insecticides, rodenticides, drugs and alcohol).
- Describe the procedure of cardio-pulmonary resuscitation.
- First aid in seizures
- First aid measures for foreign body in ear, nose, throat and eye
- Define hemorrhage and its measures to provide first aid to arrest external bleeding.
- Define frostbite and its first aid.

- Define heat stroke and its first aid.
- First aid measures in case of acute mountain sickness.
- List the dangers of animal bite, snake bite, insect bite and its first aid measures.

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | 4 | **5** | **Total** |
|---|---|---|---|---|---|---|
| **Unit hours** | 18 | 30 | 25 | 12 | 20 | 105 |
| **Marks** | 14 | 23 | 19 | 9 | 15 | 80 |

## Practical

**70 hrs**

- Handle stethoscope, sphygmomanometer, and thermometer.
- Measure blood pressure.
- Measure respiration rate.
- Measure pulse rate.
- Measure temperature.
- Measure heart rate.
- Perform cardiopulmonary auscultation and CPR.
- Perform anthropometric measurement: Limb Length, Limb girth, Height, Weight, Chest expansion.
- Assess
    - Reflexes- Superficial and Deep
    - Sensory: pain, touch, temperature, pressure
    - Muscle Tone
- Patient handling and transfer in emergency
- Perform first aid measures for shock, poisoning, seizure, hemorrhage, frost bite, heat stroke, acute mountain sickness, animal bite, snake bite, insect bite.
- Clinical observation at neurology, cardiopulmonary, gynecology ward of hospital

**References:**


1. Mathew, K. G., & Aggarawal, P. (2008). *Medicine* (3rd ed.). Elsevier.
2. Walker, B. R., Colledge, N. R., Ralston, S. H., Penman, I. D. (Eds.). (2024). *Davidson's principles and practice of medicine* (22nd ed.). Churchill Livingstone.
3. Konar, H. (2016). *DC Dutta's textbook of gynecology* (7th ed.). Jaypee Brothers Medical Publishers.
4. Bhargava, V. L. (2012). *Textbook of gynecology.* ANE Books.
5. Kumar, N. (2011). *Textbook of neurology.* Prentice-Hall of India.
6. Lindsay, K. W., Bone, I., & Fuller, G. (2010). *Neurology and neurosurgery illustrated* (5th ed.). Elsevier.

# Behavioural Science
# (Psychology and Sociology)

**Total: 2 hours/week**
**Lecture: 2 hours/week**
**Tutorial: 0 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 0 hours/week**

## Theory

**Course Description:**

This course is divided into two parts. Psychology includes motivation, learning styles, emotion, and reactions to stress, mental health, and illness. Sociology will introduce students with the basic sociological concepts, principles and social process, social institutions (in relation to the individual, family and community) and the various social factors affecting the family in rural and urban communities in Nepal.

**Course Objectives:**
After the completion of this course, the students will be able to:
1. Define and explain the common terms used in psychology and sociology.
2. Describe commonly used intelligence tests.
3. Describe factors affecting learning and its impact on ability to learn.
4. Describe the causes, signs and symptoms of common mental illnesses.
5. Understand the clients while assessment and while planning appropriate treatment methods.
6. Describe the client's social, economic and psychological status.
7. Correlate the client's health problems with social and cultural conflicts.
8. Describe the client's health problems in relation to the family, community and social factors.

## Part I–Psychology

**Course Contents:**

**Unit 1: Introduction to Psychology** **2 hrs**
- Define psychology.
- Explain educational, social, developmental, occupational, child, and clinical psychology.
- State the importance of psychology in physiotherapy.

**Unit 2: Motive** **4 hrs**
- Define and classify motive.
- Explain psychological drives, social motives, personal motives, and unconscious motive.
- Describe the uses of knowledge of motive for patients care.

**Unit 3: Intelligence** **4 hrs**
- Define intelligence.
- Enlist the intelligence tests and describe the IQ test.
- Define and describe intellectual disability (mental retardation).

**Unit 4: Learning** **4 hrs**

- Define learning.
- Explain the significance of learning.
- Enlist the factors affecting effective learning.
- State laws of learning - readiness, exercise, and effect.

**Unit 5: Emotion** **4 hrs**

- Define emotion.
- Describe external and internal changes of the individual.
- Describe the effects of emotions on health.

**Unit 6: Behavior Communication Skills** **4 hrs**

- Introduce the concept of emotional interviewing, empathy, active listening.
- Patient physiotherapy relationship and emotional management in healthcare providers

**Unit 7: Frustration and Mental conflict** **3 hrs**

- Define frustration.
- Define mental conflict.
- Classify and list the types and causes of conflict.
- Describe methods of stress reduction: relaxation, recreation.
- List the effects of meditation, diversion and exercise on frustration and mental conflict.

**Unit 8: Defense and Adjustment Mechanisms** **6 hrs**

- Define defense mechanism.
- Define adjustment mechanism.
- Classify adjustment mechanisms including:
    - Compensation
    - Rationalization
    - Projection
    - Identification
- Define substitution, sublimation, repression, regression.
- Define sympathism, withdrawal and day dreaming.
- Explain positive and negative aspects of defense mechanisms.

**Unit 9: Mental Health, Stigma, Trauma-Informed Care** **7 hrs**

- Define mental health and mental hygiene.
- List the characteristics of mental health.
- Explain the factors affecting mental health.
- Procedure of Mental State examination:
    - General appearance and behavior: hygiene, facial expression, posture and social behavior
    - Speech: flow and contents of speech
    - Mood: subjective and objective assessment of mood
    - Perception: hallucination, illusion
    - Thought: form and content of thought
    - Attention and concentration
    - Memory: immediate, recent and remote memory
    - Orientation: time, place and person
    - Intelligence: based on test.

- Judgment: social and test judgment
- Insight: absent or present

**Unit 10: Mental Illness** **4 hrs**

- Define mental illness.
- Define mental disorders: Psychosis (Schizophrenia), Neurosis, Anxiety, Depression, Somatoform disorder, Drug abuse and Alcoholism.
- Explain physiotherapy treatment for the mentally ill patient.

**Unit 11: Autism and Neurodiversity** **6 hrs**

- Introduction to autism and neurodiversity
- Describe socialization, communication, sensory and behavior issues.
- Describe briefly family centered approach (psychoeducation) to autism and neurodiversity.

## Part II- Sociology

**Unit 12: Basic Concepts in Sociology** **2 hrs**

- Definition, nature and scope of sociology.
- Relationship of sociology with other social sciences (anthropology, psychology, economics, political science)
- Importance of its study with reference to health care professionals

**Unit 13: Socialization** **2 hrs**

- Concept of social groups
- Influence of formal and informal groups on health and sickness

**Unit 14: Social process** **2hrs**

- Definition of social process, acculturation, enculturation, accommodation, adaption, assimilation, conflict and socialization

**Unit 15: Community** **2hrs**

- Definition and concept of community
- Rural and urban community - meaning and its features

**Unit 16: Social Factors in Health and Disease** **2hrs**

- Meaning of social factors
- Role of social factors and illness
- Changing concept of health
- Health inequalities

**Unit 17: Culture and Health** **2hrs**

- Definition of culture and health
- Impact of culture in human behavior
- Relationship between culture and health disorder
- Patient-centered care and shared decision making

**Unit 18: Social Problems in Person with Disability** **6hrs**

Consequences of the following social problem in relation to sickness and disability and readies to prevent these problems:

- Population explosion.
- Poverty and unemployment
- Beggary
- Juvenile delinquency
- Prostitution
- Alcoholism
- Problems of women in employment

**Unit 19: Social security** **2hrs**

- Social security and social legislation in relation to the persons with disabilities

**Unit 20: Social work** **2hrs**

- Meaning of social work
- Role of medical social worker in rehabilitation

**Final Written Exam Marking Scheme**

| **Unit** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Unit hours** | 2 | 4 | 4 | 4 | 4 | 4 | 3 | 6 | 7 | 4 | 6 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 2 | 2 | 70 |
| **Marks** | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 5 | 2 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 40 |

**References:**


1. Ramalingam, T., & Bid, D. (2017). *Psychology for physiotherapists* (2nd ed.). Jaypee Brothers Medical Publishers.
2. Morgan, C. T., King, R. A., Weisz, J. R., & Schopler, J. (2001). *Introduction to psychology.* McGraw-Hill India.
3. Ahuja, N. (2011). A *short textbook of psychiatry* (7th ed.). Jaypee Brothers Medical Publishers.
4. WHO Academy. (2025). *e-Learning caregiver skills training for families of children with developmental delays or disabilities*. World Health Organization. https://web-staging.lxp.academy.who.int/coursewares
5. Neeraja, K. P. (2008). *Textbook of sociology for physiotherapy students* (2nd ed.). Jaypee Brothers Medical Publishers.
6. Bid, D., & Ramalingam, T. (2016). *Sociology for physiotherapists and nurses* (1st ed.). Jaypee Brothers Medical Publishers.
7. Bhandari, L. P. (2014). *Fundamentals of sociology*. Buddha Publications.

# Rehabilitation and Disability Management

**Total: 4 hours/week**
**Lecture: 2 hours/week**
**Tutorial: 0 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 2 hours/week**

## Theory

**Course Description:**
This course focusses on the principles and practices involved in rehabilitation and disability management. It aims to provide students with the knowledge and skills necessary to support individuals with disabilities in achieving optimal independence and quality of life. The course covers a variety of topics including the assessment and management of disabilities, rehabilitation techniques and strategies for promoting physical, emotional and social well-being. It also deals with the existing community based rehabilitation (CBR) programs in Nepal, their role, their locations and the links between physiotherapy and CBR.

**Course Objectives:**
After the completion of this course, the students will be able to:

1. Define physiotherapy and its scope of practice.
2. Describe the current situation of disability in Nepal.
3. Describe different models of disability.
4. Conduct a community meeting in a participatory fashion to promote disability awareness and to teach health promotion and disability prevention.
5. Describe government plans, policy and legislation in relation to disability and rehabilitation.

**Unit 1: Introduction to Physiotherapy** **6 hrs**

- Definition, history, and evolution of physiotherapy (also mention the context of Nepal)
- Enlist the clinical specialties of physiotherapy.
- Describe the scope of physiotherapy.
- List the job descriptions, roles and responsibilities of Physiotherapy Assistant.
- Briefly describe different organizations and their functions with regard to physiotherapy:
    - Ministry of health and population (MoHP), Department of health services (DOHS)
    - Medical Education commission (MEC)
    - World Physiotherapy (WP)
    - Nepal Health Professional Council (NHPC)
    - Nepal Physiotherapy Association (NEPTA)

**Unit 2: Disability** **13 hrs**

- Define disability in the context of Nepal.
- Classification of disability according to the Nepal Government (depending on nature and severity): Disability card and its types
- Prevalence and causes of disability based on Nepal Census
- Distinguish between impairment, disability, and handicap along with example.

- Define the different models of health and disability with suitable examples: Charity model, Medical model, Social model, Bio psychological model, International Classification of Functioning, Disability and Health (ICF).
- Describe policy, strategies and action plan provided by government of Nepal in relation to disability: Health, Education, Transportation, Employment and social security.
- Explain the role of government, community, NGO and INGO in disability.
- Explain the role of physiotherapy assistant in disability awareness in the community.

**Unit 3: Rehabilitation 10 hrs**

- Define rehabilitation and describe the concept of "Rehabilitation for all".
- Enlist the members of rehabilitation team and describe their roles.
- List and exemplify the rehabilitation settings (different level of hospitals, specialized rehabilitation centre, clinics, hospice care, community-based, school-based, tele-rehabilitation)
- Rehabilitation level of care (informal and self-directed care, primary level, secondary level and tertiary level) and referral pathways

**Unit 4: Assistive Product 9hrs**

- Define assistive products and basic principle of provision of assistive products (Select, fit, use and follow up).
- Define and classify orthosis and prosthesis.
- Explain priority assistive product list of Nepal (PAPL).
- List the assistive products based on mobility, selfcare, hearing, vision, and communication and cognition domains.

**Unit 5: Community Based Rehabilitation 10hrs**

- Community based rehabilitation (CBR) and Institution based rehabilitation (IBR): definition, objectives and principles
- Differentiate between CBR and IBR.
- Define CBR Matrix and enlist its components.
- Define and adopt assistive products (crutches, cane, walker, splints and pulley) using local resources and its application in community.

**Unit 6: Activity of Daily Living (ADL) 16hrs**

- Definition and classification of ADL
- Distinguish between basic and instrumental activity of daily living.

**Unit 7: Professional Ethics 6 hrs**

- Define professional ethics and describe the principles.
- Enlist code of conduct of physiotherapy assistant according to Nepal Health Professional Council (NHPC).
- Describe importance of continuing medical education and lifelong learning.

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | 4 | 5 | 6 | 7 | **Total** |
|---|---|---|---|---|---|---|---|---|
| **Unit hours** | 6 | 13 | 10 | 9 | 10 | 16 | 6 | 70 |
| **Marks** | 3 | 7 | 6 | 5 | 6 | 10 | 3 | 40 |

# Practical

**Unit 1: Community Rehabilitation** **Total: 70 Hours**

- Visit nearby community and enlist potential cases to be rehabilitated in the community.
- Identify the types of disability in the community.
- Develop tools and materials to educate and counsel the patients and their environment.
- Simulate the implementation of plan developed.
- Identify different parts of orthosis and prosthesis.
- Make/modify assistive products (splints, cane, crutches, walker and pulley) using local resources.
- Simulate to apply referral pathway.
- Develop community-based rehabilitation awareness program for school children.
- Prepare, present, and submit the community visit report.
- Application of Orthosis and prosthesis
- Perform gait training for the individual using different Orthosis and prosthesis.
- Implement ADL training in children with children with disability.

**References:**


- Park, K. (2023). *Park's textbook of preventive and social medicine* (23rd ed.). Banarasidas Bhanot.
- Sunder, S. (2019). *Textbook of rehabilitation* (4th ed.). Jaypee Brothers Medical Publishers.
- Webster, J. B., & Murphy, D. P. (2019). *Atlas of orthosis and assistive devices* (5th ed.). Elsevier.
- St John Ambulance, St Andrew's First Aid, & British Red Cross. (2016). *First aid manual* (10th ed.). Dorling Kindersley.
- Yalayyaswamy, N. N. (2017). *First aid and emergency nursing* (1st ed.). CBS Publishers & Distributors.
- *Rehabilitation therapy hand book* (2nd ed., Vol. I). (2014). Mobility India-Rehabilitation Research and Training Center.
- Epidemiology and Disease Control Division. (2025, March). *Manuals & guidelines.* https://edcd.gov.np/resources/manuals

# 3rd Year

# Physiotherapy in Medical and Surgical Conditions I
# (Orthopedics, Pediatrics, and Geriatrics)

**Total: 14 hours/week**
**Lecture: 6 hours/week**
**Tutorial: 2 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 6 hours/week**

## Theory

**Course Description:**

The course intends to provide knowledge and skill to carry out common traumatic, orthopedic, pediatric and geriatric conditions.

**Course Objectives:**
After the completion of this course, the students will be able to:

1. Describe the etiology, signs and symptoms, complications and prognosis of the musculoskeletal, pediatric and geriatric conditions.
2. Describe the physiotherapy management of these conditions.
3. Demonstrate effective clinical treatment skills emphasizing these conditions.

**Course Contents:**

## Part 1: Orthopedics

**Unit 1: Orthopedics** **40 hrs**

- Definition etiology, signs and symptoms, medical, surgical and physiotherapy management of the following conditions:
  - Congenital anomalies
    - Congenital Talipes Equino Varus (CTEV)
    - Congenital Dislocation of Hip (CDH)
    - Torticollis
  - Bone infections
    - Osteomyelitis
    - Pott's Spine
  - Arthritis
    - Osteoarthritis
    - Rheumatoid arthritis
    - Ankylosing spondylitis
  - Spinal deformities
    - Kyphotic
    - Lordotic
    - Scoliosis
  - Bone, muscle and joints disorders
    - Rickets, Osteomalacia
    - Genu- valgum, varum, recurvatum
    - Plantar fasciitis, Calcaneal Spur, Flat foot

- Cervical Spondylosis, Lumbar Spondylosis
- Spondylolisthesis
- Prolapsed Inter-Vertebral Disc (PIVD)
- Frozen shoulder, rotator cuff injury

➢ Fractures
- Fracture Complications (cross-union, non-union, delayed-union, mal-union, myositis ossificans, Volkmann' ischemic contracture, compartment syndrome)

➢ Common fractures of upper limb
- Clavicle
- Shaft & condylar fracture of humerus
- Olecranon process and shaft of the Ulna
- Head and shaft of radius
- Colle's fracture
- Carpals, metacarpals and phalanges fracture

➢ Common fractures Lower limbs
- Neck of Femur
- Shaft and condylar fracture of femur
- Patella fracture
- Condylar and shaft fracture tibia
- Shaft of fibula fracture
- Malleolar fractures

➢ Common fractures of Vertebra and ribs
- Compression fracture
- Burst fracture
- Ribs

➢ Dislocation of Joint
- Shoulder, Elbow, Hip and Knee

➢ Amputations
- Indications and level
- Types of amputations
- Common sites of amputation in upper limb and lower limb
- Stump management

➢ Soft tissue injuries
- Sprain and strain (Grades)
- Inflammation (types)
- Bursitis
- Tendinitis: tennis elbow, golfer's elbow, Dequervain's tenosynovitis
- Carpal tunnel syndrome

- Physiotherapy management of peripheral nerve injury

## Part 2: Pediatrics

**Unit 2: Pediatrics** **10 hrs**

- Introduction of growth and development and list their differences.
- Common devices used in pediatric physiotherapy
  - ➢ Bobath ball, trampoline, balance board, fine motor equipment, wedges, bolster, standing frame, sensory toys, vestibular swing.
- Physical (gross and fine), language, social and cognitive developmental milestone of child till 5 year of age.
- ICF based pediatric physiotherapy assessment of pediatric neurological cases

- Introduction of home program in pediatric cases.
- Positioning and handling of pediatric neurological cases.
- Basic of pediatric physiotherapy approaches. (Neuro developmental therapy, conductive therapy)
    - Introduction, principle and indication and contraindication.

**Unit 3: Physiotherapy Management** **8 hrs**

- Cerebral Palsy (CP), Spina bifida, Hydrocephalus
- Muscular Dystrophy: Duchenne Muscular dystrophy
- Down's syndrome, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder, and Specific Learning disorder.
- Congenital heart diseases: Atrial Septal Defect (ASD), Ventricular Septal Defect (VSD), Patent ductus arteriosus (PDA) and Tetralogy of Fallot's (TOF)

## Part 3: Geriatrics

**Unit 4 Geriatrics** **8 hrs**

- Assessment of geriatric conditions
- Physiotherapy management in following conditions:
    - Fall ( balance, functional strengthening, use of assistive/supportive devices)
    - Dementia and Alzheimer's Disease
    - Osteoporosis

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | 4 | **Total** |
|---|---|---|---|---|---|
| **Unit hours** | 40 | 10 | 8 | 8 | 66 |
| **Marks** | 24 | 6 | 5 | 5 | 40 |

# Practical

**Total hours: 66 hrs**

**Part 1: Orthopedics**

1. Perform musculoskeletal assessment

**2. Fractures**

a) Examine Fractures
   - Types of fractures (Simple and Compound)
   - Categorize fractures (Transverse, Oblique, Spiral, Communited, Segmental)

b) Management of Fractures
   - Orthopedic management: cast application, skin and skeletal traction, splint application (Thomas, Braun Bohler)
   - Demonstrate physiotherapeutic management.

**3. Dislocations**

a) Orthopedic management(Conservative, Surgical)
b) Demonstrate physiotherapeutic management.

**4. Soft tissue injuries**

a) Perform the exercises and apply electrotherapeutic modalities.

**5. Amputation**

a) Assess preoperative and postoperative amputee.
b) Manage preoperative and postoperative amputee (below knee amputee)
c) Manage the stump (stump care and bandaging).
d) Identify and demonstrate different types of prosthesis.

**6. Degenerative and inflammatory conditions**

a) Perform the exercises and apply electrotherapeutic modalities.

**7. Deformities**

a) Identify the deformities.
b) Perform Exercise.
c) Apply Orthosis: Cervical collar, Shoulder immobilizer, hand splints, TLSO, Knee brace, AFO, Lumbo-sacral brace

**8. Nerve Injuries**

a) Identify Erb's palsy, wrist drop, claw hand, ape hand deformity, and foot drop.
b) Perform the exercises and apply electrotherapeutic modalities.
c) Apply Orthosis.

**Part 2: Pediatrics**

1. Perform pediatric assessment.
2. Demonstrate primitive reflex.
3. Demonstrate positioning and handling of CP.
4. Demonstrate tone management techniques (hypertonia, hypotonia, and dystonia).
5. Demonstrate use of assistive/supportive devices.
6. Demonstrate sensory integration (Autism/ADHD/SPD).
7. Perform neuro developmental therapy, and conductive therapy.

**Part 3: Geriatrics**

1. Perform geriatric assessment.
2. Perform various techniques to prevent fall.
3. Demonstrate use of assistive devices for geriatric patients.
4. Demonstrate physiotherapy techniques for Dementia, Alzheimer's disease, and Osteoporosis.

**References:**


1. Joshi, J., & Kotwal, P. (2016). *Essentials of orthopedics and applied physiotherapy* (3rd ed.). Elsevier.
2. Maheshwari, J., & Mhaskar, V. A. (2015). *Essential Orthopedics* (5th ed.). The Health Sciences Publishers.
3. Downie, P. A. (Ed.). (1993). *Cash's textbook of orthopedics and rheumatology for physiotherapists* (1st ed.). Jaypee Brothers Medical Publishers.
4. Hoppenfield, S. (1976). *Physical examination of spine and extremities.* Appleton & Lange.

# Physiotherapy in Medical and Surgical Conditions II

**Total: 14 hours/week**
**Lecture: 6 hours/week**
**Tutorial: 2 hours/week**
**Practical: 0 hours**
**Lab/Clinical: 6 hours/week**

## Theory

**Course Description:**
This course comprises physiotherapy management in various conditions. The first section covers neurological conditions and their physiotherapy management. The second section is devoted to cardiopulmonary conditions and their physiotherapy management. The third section focuses on women's health and their physiotherapy management.

**Course Objectives:**
After the completion of this course, the students will be able to:

- Describe the etiology, signs and symptoms and physiotherapeutic management of the commonly encountered neurological, cardiopulmonary and women's health conditions.
- Describe physiotherapeutic management in neurological, cardiopulmonary conditions and women's health conditions.
- Identify various types of equipment used in physiotherapeutic management for neurological, cardiopulmonary, and women's health conditions.
- Provide counselling for the home care.

**Course Contents:**

**Unit: 1 Neurological Conditions** **25 hrs**

- Describe the etiology, signs and symptoms, types and physiotherapy management of the following conditions:
  - Cerebrovascular accident (CVA)
  - Encephalitis, meningitis and poliomyelitis
  - Parkinsonism
  - Spinal cord injury (SCI)
  - Multiple Sclerosis
  - Non-traumatic (Pott's paraplegia)
  - Spina bifida
  - Guillain-Barre Syndrome (GBS)
  - Diabetic neuropathy
  - Traumatic Brain Injury
  - Facial Palsy and Bell's palsy
  - Brain tumors

**Unit 2: Cardiopulmonary Conditions** **27 hrs**

- Describe etiology, signs and symptoms, medical, surgical and physiotherapy management of the following cardio pulmonary conditions:
  - Chronic Obstructive Pulmonary Disease (COPD)
  - Pneumonia
  - Asthma

- Pleural effusion
- Pneumothorax
- Pulmonary Tuberculosis
- Coronary artery disease (Myocardial Infraction)
- Hypertension and hypotension
- Deep Vein Thrombosis (DVT)
- Atherosclerosis
- Embolism
- Varicose vein

- Describe physiotherapy management after surgical procedures: Pneumonectomy, Lobectomy, thoracotomy, Percutaneous coronary intervention (PCI), Coronary artery bypass graft (CABG), mastectomy, laparotomy
- Incentive spirometer: Definition, indication and contraindication
- Bronchial hygiene technique: Definition, indication, contraindication and technique of application of
  - Breathing exercise
  - Humidification
  - Nebulization
  - Breathing exercises (Types and techniques)
  - Percussion, Vibration, shaking
  - Coughing (self and assisted) and huffing
  - Postural drainage
  - Active cycle of breathing technique (ACBT)
  - Positioning

- Introduction to ICU. Definition of mechanical ventilation. List the equipment's, airways and tubes used in ICU. Mention the role of physiotherapy in adult and pediatric ICU.

**Unit 3: Women's Health** **6hrs**

- Physiotherapy during prenatal, antenatal and postnatal period
- Physiotherapy management of urinary incontinence, pelvic organ prolapse

**Unit 4: General Medical and Surgical Conditions** **8hrs**

Physiotherapy management in following general medical and surgical conditions:

1. Burn, post burn contracture, use of splints in burn
2. Leprosy and its complications
3. Post plastic surgery procedures
4. Vertigo: Epley's maneuver
5. Diabetes and its complications

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | 4 | **Total** |
|---|---|---|---|---|---|
| **Unit hours** | 25 | 27 | 6 | 8 | 66 |
| **Marks** | 15 | 16 | 4 | 5 | 40 |

# Practical

**Total hours: 66 hours**

**Unit 1: Perform Neurological Assessment**

1. Glasgow Coma Scale (GCS)
2. Cranial nerve examination
3. Reflexes– Superficial and Deep
4. Myotomes and dermatomes
5. Sensory examination

**Unit 2: Neurology**

Assess and perform physiotherapy management for the following conditions:

- Cerebrovascular accident
- Spinal cord injury
- Traumatic Brain Injury
- Parkinsonism
- Gullian Barre Syndrome
- Bell's palsy and Facial Palsy
- Poliomyelitis

**Unit 3: Perform Cardiopulmonary Conditions**

- General assessment (Observation, Inspection, Auscultation)
- Observation of chest radiographs
- Postural drainage
- Percussion, vibration, shaking
- Breathing exercises
- Nebulization
- Patient care in thoracotomy
- Handling technique after abdominal surgery
- Identification of equipment in ICU
- Incentive spirometer
- Coughing and huffing
- Dyspnea relieving positions
- Edema management

**Part 4: Women's Health**

- Perform different exercise in prenatal, antenatal and postnatal conditions.
- Perform exercise in urinary incontinence and pelvic organ prolapse.

**Part 5: General Medical and Surgical Conditions**

- Perform physiotherapy management of burn, scar, edema and splint application
- Perform physiotherapy management of Leprosy and its complications
- Perform exercise after plastic surgery
- Perform exercise in vertigo: Epley's Maneuver
- Perform physiotherapy management in diabetes and its complications

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# Rehabilitation and Healthcare Management

**Total: 12 hours/week**
**Lecture: 9 hours/week**
**Tutorial: hours/week**
**Practical: hours**
**Lab/Clinical: 3 hours/week**

## Theory

**Course Description:**
This course is designed to provide knowledge on rehabilitation, healthcare management, public health, environmental health, leadership skills, personnel management, waste management, and healthcare delivery system. This course focuses on transfer techniques, wheelchair use, and audit of accessible environment, disaster management, and vocational and psychological rehabilitation.

**Course Objectives:**
After the completion of this course, the students will be able to:

1. Comprehend the concept of basic rehabilitation.
2. Be familiar with wheel chair, its parts, and its accessibility.
3. Describe the application of transfer techniques.
4. Conduct vocational and psychological training for persons with disabilities.
5. Define healthcare management principles and their application to the practice of physiotherapy.
6. Describe the application of public health and environmental health.
7. Be familiar with hospital waste management.
8. Comprehend the role of physiotherapy in disaster management.

**Course Contents:**

**Unit 1: Basic Rehabilitation** **12 hrs**

- List different health conditions based on specialization for providing rehabilitation services.
- International classification of functioning, disability and health (ICF): components and application
- Describe steps for providing rehabilitation / rehabilitation cycle (Assess including red flag identification and goal setting, delivery of intervention, reassess and discharge).
- Define and list common red flags, yellow flags.

**Unit 2: Transfer Techniques** **10 hrs**

- Define transfer technique and describe its types.
- Describe the importance of transfer techniques.
- State the principle of transfer techniques.
- State proper body mechanics during transfer.

**Unit 3: Wheelchair** **12 hrs**

- Define wheelchair, identify its types, and describe its uses.
- Explain the parts of wheelchair with a diagram.
- Explain steps of providing wheelchair: select, fit, train and follow up.

- Execute different wheelchair transfer technique and basic user training: skin care and pressure relief technique, rolling (forwards, backwards, roll on soft surface), stopping, turning, fold and unfold wheelchair, mobility, obstacles clearance and hills and ramp.
- Describe the maintenance and care of a wheelchair.

**Unit 4: Universal Design and Accessible Environment 8 hrs**

- Define universal design and architectural barriers.
- Describe architectural design features and their accessibility.
- Explain accessibility of wheelchair in various infrastructure settings (house, office, hospitals) and public transportation.

**Unit 5: Vocational Rehabilitation 8hrs**

- Define vocational rehabilitation.
- Describe the importance of vocational rehabilitation based on varying functional capacity.
- Explain the role of vocational rehabilitation team.

**Unit 6: Counselling 4hrs**

- Define counselling.
- Describe the importance of counselling.
- Explain the methods of counselling.

**Unit 7: Healthcare Management 20hrs**

- Define management and healthcare management.
- State organizational management principle and its functions.
- Differentiate between planning and health planning with steps/process.
- Define staffing and its importance in health care.
- Define supervision, monitoring, and evaluation, and describe their types.
- Definition, methods and importance of record keeping in Health Management Information System (HMIS)
- Explain the rehabilitation module of HMIS.
- Organogram of health system and health care institution in the context of Nepal
- Define health insurance.
- Describe the current scenario of health insurance related to rehabilitation in Nepal.

**Unit 8: Public Health and Epidemiology 8 hrs**

- Define public health.
- Explain the scope of public health.
- Define epidemiology, importance, and its application in medical science.
- Define different terminologies used in epidemiology and epidemiological triad.
- Explain the dynamic of disease transmission process/ chain of infection.

**Unit 9: Primary Healthcare 6 hrs**

- Concept of prevention and disease control and explain the levels of prevention with examples.
- Primary healthcare: definition, elements and principles
- Explain modes of intervention: health prevention, promotion, curative, rehabilitation and palliative.

**Unit 10: Environmental Health and Disaster Management 6 hrs**

- Explain hospital waste management process in Nepal.

- Differentiate between risk and hazard.
- Describe the health hazards from hospital waste.
- Describe the hospital born infections (nosocomial and iatrogenic infections).
- Define housing and the basic principles of housing (site selection, material used, space, light, ventilation, and waste disposal management.
- Define disaster and enlist the causes. Explain disaster management and role of physiotherapy.

**Unit 11: Health Communication** **5 hrs**

- Define communication.
- Describe the barriers to communication.
- Describe the ways of communicating effectively with people who have a disability.
- Explain the role of communication in rehabilitation.

**Final Written Exam Marking Scheme**

| **Unit** | **1** | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Unit hours** | 12 | 10 | 12 | 8 | 8 | 4 | 20 | 8 | 6 | 6 | 5 | 99 |
| **Marks** | 10 | 8 | 10 | 6 | 6 | 3 | 17 | 6 | 5 | 5 | 4 | 80 |

## Practical

**Total: 33 hours**

- Practical implementation ICF model with patients
- Demonstrate various transfer techniques: Bed to wheelchair, wheelchair to ground, wheelchair to toilet and vice versa with maximum assist, moderate assist, minimum assist.
- Simulate disaster-based emergency mock drills.
- Perform training methods to use the wheelchair.
- Record keeping and reporting using HMIS rehabilitation module
- Prepare different health communication tools.

**References:**


1. Sunder and Sunder, *Text book of rehabilitation* (3rd edition, Jaypee brothers medical publishers).
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# Clinical Practicum

# (Hospital and Clinical Settings)

**Total: 20 weeks**

**Course Description:**
This comprehensive clinical practice program is designed to help students apply the learned knowledge and skills under real scenario. This course consists of clinical practice in hospitals and/or other suitable settings. The students will be supervised primarily by an instructor/lecturer. It is the instructor/lecturer's responsibility to organize the clinical experience for each student, and to provide theoretical and practical support.

**Course Objectives:**

1. Relate and adapt to varying work settings.
2. Demonstrate confidence in dealing with clinical problems.
3. Assess patients.
4. Plan patient treatments.
5. Demonstrate effective patient treatment using the practical skills.
6. Demonstrate the analytical skills to evaluate the effect of treatment methods.
7. Progress or modify treatments in response to evaluation, and to discharge patients when appropriate.
8. Demonstrate the ability to keep accurate and detailed patient record.
9. Communicate effectively with multidisciplinary team, patients and their families.
10. Give effective health care advice and prevention.

**Duration:**
**Twenty Weeks (120 days excluding Saturdays)**

| S. No. | Subject | Duration (days) |
|---|---|---|
| 1 | Orthopedics | 40 |
| 2 | Neurology | 30 |
| 3 | Cardiopulmonary | 15 |
| 4 | Pediatrics | 15 |
| 5 | Women's Health | 10 |
| 6 | Geriatrics | 10 |

Students should fulfill the above-mentioned requirements, and must perform all the physiotherapy treatment under the supervision of departmental staff. Students should keep their practical record (logbook) signed periodically by their supervisor/instructor in each subject.

## A. Musculoskeletal Assessment (Orthopedics):

**Subjective Assessment:**

- Establish trust with the patient/family.
- Perform demographic assessment: Name, age, sex, address, occupation, and marital status.
- Elicit complete data related to the major complaint.
- Take history of present illness.
- Take past medical history.
- Take personal history.

- Take family history.
- Take socio-economic status.
- Perform pain assessment: onset, side, site, types, radiation, mode of injury, variation of pain / 24-hour pattern, aggravating and relieving factors, VAS scale, and NPRS.
- Identify red flags and yellow flags.

**Objective Assessment:**

- On observation: static and dynamic, posture, gait, built, assistive products
- On inspection: Swelling, erythema, Atrophy, Deformity, scar
- On palpation: Tenderness, Oedema, Temperature variation, crepitus
- On examination:
  - Measure vital signs
  - Perform Motor assessment: ROM, MMT, Muscle girth, limb length
  - Perform Sensory examination: Superficial and deep sensation, reflexes, Dermatome and Myotome
  - Perform ADL assessment

**Investigation:** X-ray interpretation (fracture, deformity), report reading of CT scan and MRI, DEXA, blood examination report reading

**Analysis:**

- Make the problem list.
- Set the goals: short- and long-term goals under consultation with a physiotherapist.

**Treatment Plan:**

Under the supervision and consultation with physiotherapist,

- Counsel home exercise program.
- Record progress and follow up.

## B. Neurological assessment :

**Subjective assessment:**

- Establish trust with the patient/family.
- Perform demographic assessment: Name, age, sex, address, occupation, and marital status.
- Elicit complete data related to the major complaint.
- Take history of present illness.
- Take past medical history.
- Take personal history.
- Take family history.
- Take socio-economic status.
- Perform pain assessment: onset, side, site, types, radiation, mode of injury, variation of pain / 24-hour pattern, aggravating and relieving factors, VAS scale, and NPRS.
- Identify Red flags and yellow flags.

**Objective Assessment:**

- On observation: static and dynamic, posture, gait, built, assistive products, attitude of limb, involuntary movements (clonus, tremor)
- On inspection: Swelling, erythema, atrophy, deformity, pressure sore, respiratory pattern
- On Palpation: Tenderness, Oedema, temperature variation

- On examination:
  - Measure vital signs.
  - Higher mental functions: GCS, orientation, memory, emotional status
  - Perform motor assessment: ROM, MMT, Muscle girth.
  - Perform cranial nerve testing.
  - Perform sensory examination: Superficial and deep sensation, reflexes (normal and pathological), tone, Dermatome and Myotome.
  - Perform bowel and bladder examination.
  - Perform coordination and balance tests, posture under supervision and consultation with physiotherapist.
  - Perform ADL assessment.

**Investigation:** X-ray interpretation, report reading of CT scan and MRI, blood examination report reading

**Analysis:**

- Make the problem list.
- Set the goals: short- and long-term goals under consultation with physiotherapist.

**Treatment Plan:**

Under the supervision and consultation with physiotherapist,

- Counsel home exercise program.
- Record progress and follow up.

## C. Cardiopulmonary Assessment:

**Subjective Assessment:**

- Establish trust with the patient/family.
- Perform demographic assessment: Name, age, sex, address, occupation, and marital status.
- Elicit complete data related to the major complaint.
- Take history of present illness.
- Take past medical history.
- Take personal history.
- Take family history.
- Take socio-economic status.
- Perform pain assessment: onset, side, site, types, radiation, mode of injury, variation of pain / 24-hour pattern, aggravating and relieving factors, VAS scale, and NPRS.
- Cardinal signs and symptoms: cough, sputum, breathlessness, incontinence.
- Identify red flags and yellow flags.

**Objective Assessment:**

- On observation: static and dynamic, posture, gait, built, assistive products, attitude of limb, cyanosis, clubbing, peripheral edema
- On inspection: Swelling, erythema, atrophy, deformity, respiratory pattern, pressure sores
- On palpation: Tenderness, Oedema, temperature variation, crepitus, tracheal deviations
- On examination:
  - Measure vital signs
  - Higher mental functions: GCS
  - Perform percussion, auscultation (breath sounds and heart sounds)
  - Measure chest expansion and chest mobility
  - Perform motor assessment: MMT, Muscle girth
  - Perform sensory examination: Superficial and deep sensation, reflexes (normal and pathological), tone, Dermatome and Myotome

- Mode of ventilation (ICU patients)
- Perform ADL assessment

**Investigation:** X-ray interpretation, report reading of ECG, ABG, CT scan and MRI, blood examination report reading, spirometer

**Analysis:**

- Make the problem list.
- Set the goals: short- and long-term goals under consultation with physiotherapist

**Treatment Plan:**

Under the supervision and consultation with physiotherapist,

- Counsel home exercise program.
- Record progress and follow up.

## Pediatric Assessment:

**Subjective Assessment:**

- Establish trust with the patient/family.
- Perform demographic assessment: Name (patient and parent), age, sex, date of birth, address, birth weight and height, and head circumference.
- Elicit complete data related to the major complaint.
- Take history of present illness.
- Take birth history: prenatal, perinatal, and postnatal.
- Take family history.
- Take social history.
- Take immunization history.
- Take developmental history.
- Identify red flags and yellow flags.

**Objective Assessment:**

- On observation:
- General observation: alert, playful, drowsy, irritable, and crying
- Facial appearance, posture, gait, built, assistive products, attitude of limb, cyanosis, clubbing, peripheral edema
- On inspection: Swelling, erythema, atrophy, deformity, respiratory pattern, pressure sores
- On palpation: Tenderness, Odema, temperature variation, crepitus
- On examination:
  - Measure vital signs
  - Measure weight and height
  - Higher mental functions: GCS
  - Perform cranial nerve examination
  - Perform percussion, auscultation (breath sounds and heart sounds)
  - Measure head circumference, chest expansion and chest mobility
  - Perform motor assessment: MMT, Muscle girth, ROM, Limb length
  - Perform oromotor assessment
  - Perform sensory examination: Superficial and deep sensation, reflexes (normal and pathological), tone, Dermatome and Myotome
  - Perform balance, coordination, and posture assessment
  - Mode of ventilation (NICU patients)
  - Perform ADL assessment

**Investigation:** X-ray interpretation, report reading of ABG, CT scan and MRI, blood examination report reading

**Analysis:**

- Make the problem list.
- Set the goals: short- and long-term goals under consultation with a physiotherapist.

**Treatment Plan:**

Under the supervision and consultation with physiotherapist,

- Counsel home exercise program.
- Record progress and follow up.

## Women's Health Assessment:

### Subjective Assessment:

- Establish trust with the patient/family.
- Perform demographic assessment: Name, age, sex, address, occupation, weight, marital status, menstrual history, obstetric history - pregnancies, birth, abortion, contraception.
- Elicit complete data related to the major complaint.
- Take history of present illness.
- Take past medical history.
- Take personal history.
- Take family history.
- Take socio-economic status.
- Perform pain assessment: onset, side, site, types, radiation, mode of injury, variation of pain / 24-hour pattern, aggravating and relieving factors, VAS scale, and NPRS.
- Identify red flags and yellow flags.

### Objective Assessment:

- On observation: static and dynamic, posture, gait, built
- On inspection: Swelling, erythema, atrophy, deformity, scar
- On Palpation: Tenderness, Oedema, temperature variation, crepitus
- On examination:
  - Measure vital signs.
  - Perform motor assessment: ROM, MMT, muscle girth, limb length.
  - Perform sensory examination: Superficial and deep sensation, reflexes, Dermatome and Myotome.
  - Pelvic floor assessment, muscle tone
  - Perform breast examination, and abdominal examination.
  - Perform ADL assessment.

**Investigation:** X-ray interpretation, report reading of CT scan and MRI, DEXA, blood examination report reading, PAP smear report reading

**Analysis:**

- Make the problem list.
- Set the goals: short- and long-term goals under consultation with a physiotherapist.

**Treatment Plan:**

Under the supervision and consultation with a physiotherapist:

- Counsel home exercise program.
- Record progress and follow up.

**D. Geriatric Assessment:**

**Subjective Assessment:**

- Establish trust with the patient/family.
- Perform demographic assessment: Name, age, sex, address, occupation, and marital status.
- Elicit complete data related to the major complaint.
- Take history of present illness.
- Take past history.
- Medical and drug history
- Take personal history- comorbidity.
- Take history of fall.
- Take family history.
- Take socio-economic status.
- Perform pain assessment: onset, side, site, types, radiation, mode of injury, variation of pain / 24-hour pattern, aggravating and relieving factors, VAS scale, and NPRS.
- Identify red flags and yellow flags.

**Objective Assessment:**

- On observation: static and dynamic, posture, gait, built, assistive products, tremor
- On inspection: Swelling, erythema, atrophy, deformity, scar
- On Palpation: Tenderness, Odema, temperature variation, crepitus
- On examination:
  - Measure vital signs
  - Perform motor assessment: ROM, MMT, muscle girth, limb length, muscle tone
  - Perform sensory examination: Superficial and deep sensation, reflexes, Dermatome and Myotome,
  - Perform ADL assessment: Bathing, dressing, eating, transferring, toileting and continence
  - Fall and risk assessment: History of fall, environmental hazard, strength, and balance assessment
  - Perform bowel and bladder assessment

**Investigation:** X-ray interpretation, report reading of CT scan and MRI, DEXA, blood examination report reading

**Analysis:**

- Make the problem list.
- Set the goals: short- and long-term goals under consultation with a physiotherapist.

**Treatment plan:**

Under the supervision and consultation with a physiotherapist:

- Counsel home exercise program.
- Record progress and follow up.

# Comprehensive Community physiotherapy

**Community rehabilitation (Saturdays are not included) & Community outreach project and report writing- 4 weeks**

(The community program may include field projects at community rehabilitation centers, old age home, or special schools.)

**Course Description:**

This course offers an in-depth understanding of community physiotherapy, emphasizing health promotion, disease prevention, and rehabilitation in community settings.

**Activities:**

- Identify needs or problems in the community.
- Work with community partners to create new knowledge, or develop understanding about practical community issues related to rehabilitation in order to bring the change.
- Give intervention to the patients in the community using local resources.
- Counsel the patients, family and society.
- Design home program and do modifications as per the needs of patients.
- Aware community about disability prevention, early identification, management and its referral.
- Promote health awareness and advocacy program related to rehabilitation and disability in coordination with local stakeholders.

The student should visit the community setting, identify and assess the cases, design treatment plan with locally available resources. The student performs self-study, problem-based learning with at least 3 cases, record and submit the report to the supervisor.
Students should fulfill the above-mentioned requirements, and they must perform all physiotherapy treatment under the guidance of a supervisor. Students should keep their practical record (logbook) signed periodically by their supervisors.

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| 3 | Shamed Kumar katila | Physical Rehabilitation Association of Nepal, Kathmandu | |
| 4 | Parbin Yadav | National Trauma Center, Kathmandu | |
| 5 | Binay Kadel | Bir Hospital, Kathmandu | |
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