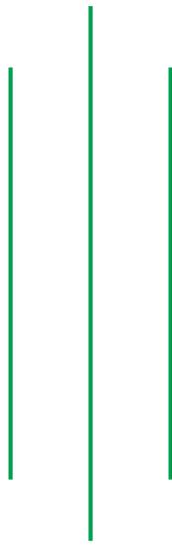


Syllabus for Licensing Examination of Diploma in Prosthetics and Orthotics 2026



Nepal Health Professional Council

Bansbari, Kathmandu

Table of Contant

S.No.	Topics	Marks
1	Basic Science (Anatomy, Physiology, Pathology)	10%
2	Orthotics Material Science, Applied Mechanics and Workshop Technology	10%
3	Orthopaedics Amputation Surgery & Biomechanics	15%
4	Lower Limb and Upper Limb Prosthetics	25%
5	Lower Limb and Upper Limb Orthotics	25%
6	Spinal Orthotics	10%
7	Physical Medicine Rehabilitation	5%

1. Basic Science (Anatomy, Physiology & Pathology)

Anatomy

- General Anatomy and Anatomical Terms, Skeletal Classification and types
- Structures of bones and joint, skull, vertebrae, pelvic girdle and thorax
- Upper extremities and Lower extremities muscles - position, attachments, action & nerve supply
abdominal muscles, head ,face and neck muscles - position, attachments, action & nerve supply
- Anatomical regions formation & contents of axilla, anterior & posterior triangle of neck, femoral triangle, popliteal space

Physiology

- Introduction to physiology & different systems of the body
- Body fluids, tissue cells, cytoplasm, nucleus, irritability, conductivity, reproduction.
- Elementary tissue of the body & their functions development & growth of bones
- The circulatory system – Heart, Blood vessels attached to it & Nerve supply of the heart, Cardiac cycle of the heart, Cardiac cycle, the heart sounds, The pulse, Blood pressure, The cardiac output, Circulation of blood throughout body, Principal blood vessels, arteries & veins.
- The blood composition of blood & functions – the coagulation of blood.
- The spleen & the Reticula Endothelial system ,the classification of food
- The digestive system, the liver & pancreas, The respiratory system and respiration, Metabolism Endocrine glands, Urinary system Reproductive system, The nervous system – sympathetic, Parasympathetic, Organs of special senses and skin.

Pathology

- Introduction to pathology, General pathology
- Inflammation – signs and symptoms – types of inflammation, Acute & Chronic inflammation
- Infections – bacteria and viruses, immunity, types, classification, control of infection & prevention.
- Asopsis and sterilization, pyogenic infection – boils, Tuberculosis infection of bones & joints & management. Fungal infection virus infection – Poliomyelitis influence.
- Wounds – types of healing process
- Gangrene – types, causes, signs & symptoms and management.
- Inflammation of joints – arthritis – classification and pathology.

2. Orthotics Material Science & Workshop Technology

- Introduction to workshop technology
- Bench work-bench vice, Leg vice, Hand vice, Hammers of different types, Files of various types, Chisels, Scrappers & their uses. Hack Saws, Wrenches, Surface plate, Angle plate, V-block Centre Punches, , etc.

- Measuring Tools – scales & tapes, calipers, Micrometer, Vernier callipers, gauges, plug gauges, dial gauges, indicators.
- Fundamentals of soldering, brazing and welding, drilling machine, milling machines, grinding machines, lathe machines, shaping machines- Parts, types, use, operational process
- Drilling-Machine operation, tools holding devices, types of drill, reamers and uses, cutting internal-external threads, by using taps and dies, counter sinking, counter boring.
- [Material & Tools used in Prosthetics & Orthotics](#); -
- Rubber- different types uses, density, resilience, utility in prosthetic & Orthotics
- Plastics-types, strength impregnation, lamination colouring & utility:
- Ferrous metals – Steel variety & uses , Non–ferrous metals and alloys, aluminium, various suitability.
- Fabrics & Leather , Plaster of Paris ,Adhesive & Fasteners
- Special tools & equipment’s used in prosthetic & orthotic work

Applied mechanics:

- Simple stress & strains Definition of stress and strains, factor of safety, safe stress, modulus of elasticity, longitudinal strain and lateral strains, etc. –
- Definition of moment inertia & radius of gyration of a solid body
- Shear Stress & Bending moments
- Torsion Definition of torsion, angle of twist, polar moment of inertia etc
- Riveted Joints Types of riveted joints, strength of joints,
- Friction ,Principles of friction , Types
- Classification of beams, types of loads, definition of shear force & bending moment of a loaded beam

3. Orthopaedics Amputation surgery & Biomechanics

- Introduction to Orthopaedics ,Principles of Orthopaedics ,Congenital deformities ,
- Diseases of nervous System , Poliomyelitis , Obstetrical paralysis
- CP, Hemiplegia, Paraplegia, Pyogenic infection, Tuberculosis, Leprosy, Chronic arthritis
- Rheumatoid arthritis, Osteoarthritis, Neuropathic arthritis, Metabolic diseases
- Rickets, Avitaminosis, Bone tumours, Trauma
- Fractures upper extremity ,Fracture lower extremity
- Introduction to amputation surgery – indications, Principles of amputation, types, techniques.
- Amputation in children &Adults (Upper & Lower Extremity) and its complications (various levels)
- Amputation in lower extremity & its complications (various levels)
- Postoperative care of the stump properties of good stump.

- Examination & prescription, Stump dermatology ,Common skin diseases and their management
- Care of Stump ,Latest techniques of amputation Myodesis – Myoplasty
- Definition of Kinesiology & Bio-mechanics ,
- Definition of Kinetics & Kinematics , Centre of gravity of human body,
- Segment of centres of gravity, human movements & its significance
- Forms of human movement their characteristics & factors affecting them.
- Analysis of movement, Body links and motion of parts, Closed chain systems, Open chain system, Four bar mechanism, Measurement of joint motion.
- Electrogonio-metric method , Mechanics of the spine , Lumbar discometry
- Human Locomotion Bio-mechanics of lower extremity & upper extremity

4. Lower extremities and upper extremities Prosthetics

- Levels of amputation & limiting factor (lower extremity) , Psychological aspects of amputation
- Classification of congenital skeletal limb deficiencies, Prosthetic assessment and evaluation
- Prosthetic prescription, Immediate & early Prosthetic management
- Prosthetic components below knee & above knee
- Examination of stump, measurement, cast taking POP modification, fabrication, alignment & fitting procedures for below knee & above knee amputations (this include prosthesis for partial foot, choparts, syme's below knee, through knee above knee amputations.
- Gait analysis of BK/ AK amputees fitted with prostheses. , Check out of BK & AK prosthesis
- Maintenance & care of prosthesis, Hip disarticulation & Hemipelvectomy prosthesis
- Bio-mechanics of BK, above knee & hip disarticulation prosthesis, Fluid controlled prosthesis
- Modular & other modern types of prosthesis
- Development of squatting type prosthesis – Madras & Jaipur port, etc,
- Study of publication of sources for updating information on L.E. Prosthesis Examination
- Medical consideration applied anatomy and pathological consideration
- Classification of congenital skeletal limb deficiencies , Prosthetic prescription ,Amputee trainee
- Components of upper extremity prostheses, control & harness systems.
- Fabrication principle & procedures for upper extremity prostheses.
- Measurement fitting & alignment, Check-out & care of B.E. prostheses, Biomechanics of U.E. prostheses.
- Harness & control systems Below Elbow harnessing & this causes, shoulder amputee harnessing.
- Clinical aspects of U.E. prosthesis , Training in the use of U.E. prosthesis
- Electro-mechanical myoelectric and other externally powered prostheses

5. Lower extremities and Upper extremities Orthotics

- Anatomy of Foot
- Orthotic – Prescription for different pathological condition, pathomechanics of foot & ankles.
- Shoes, boots & their components
- Shoe modifications, principles & procedures in clinical application
- Biomechanics of the foot
- Pathomechanics Lower extremity (including foot, ankle, knee and hip.)
- Introduction to Orthotic management
- Lower extremity orthotic components & functions.
- Principles of taking measurements, selection of components, fabrication, alignment fitting and check-out of orthoses.
- The influence of error in bracing upon deformity of lower extremity
- Analysis of Pathological & orthotic gait
- The Physiological basis of Orthotic. Methods
- Functional Anatomy of hand
- Measurement, selection of materials & components, fabrication & fitting of the following:
- Static fingers hand splints. ,Functional hand splints, Functional arm braces, Feeders
- Special assistive devices Myoelectric & other externally powered upper extremity orthosis
- How to train the patients to use functional splint & arms braces
- Biomechanics of splints and braces

6. Spinal Orthotics

- Historical development of spinal orthoses.
- Anatomical and Physiological, Surface of anatomy of trunk
- Principles of construction and fitting of spinal Orthoses.
- Biomechanical principle and Functions of spinal Orthoses.
- Indications and contraindications for spinal orthosis
- The Physiological basis of Orthotic. Methods
- Orthotic treatment of cervical condition, lumbar & thoracic conditions
- Spinal Orthotic prescription, The M.W. brace, Boston brace ,TLSO, LSO,CTLSO
- Principle, material, measurement/ casting, fabrication of all types of spinal orthosis

7. Physical Medicine and Rehabilitation(PMR)

- Introduction to Physical Medicine & Rehabilitation.
- Muscle charting ,Electro-therapy , Hydro-therapy
- Application of the above topics in management of disabling conditions
- Neuro muscular diseases type and management
- Arthritis, types and management
- Crutches & uses, different mobility and assistive devices
- Bandaging of stumps, BK/AK etc. Knees, Elbows, Hands, Wrists and Ankles.
- Gait training & analysis of patients fitted with orthoses & prostheses
- Prescription of appliances. , Introduction to the subject, Visit to various department, of the institution.
- General idea & definition of prosthetics / orthotics ,
- Function of different sections / departments of the institute
- Rehabilitation team and role of each member of the team.
- Psychology of disabled Goals & methods of scientific psychology
- Normal personality, normal growth & development Heredity,
- Psychometry Testing & motivation
- Emotional life of the disabled & psychological assessment ,Counselling ,Social & Vocational Aspects, Disability & social effects, Home environment of disabled ,
- CBR – concept and application, Attitude of the society
- Vocational problems, Vocational assessment, Vocational counselling and guidance, Follow up