

CURRICULUM

CERTIFICATE COURSE IN PROSTHETIC & ORTHOTIC

REHABILITATION COUNCIL OF INDIA
(A Statutory Body under the Ministry of Social Justice and Empowerment)
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REHABILITATION COUNCIL OF INDIA

Syllabus of 12 months Certificate Course in Prosthetic & Orthotic

1. Nomenclature of the Course : Certificate Course in Prosthetic & Orthotic

2. Purpose

To train category III personnel (bench workers) for assembly and fitting of Orthopaedic appliances, artificial limbs and other rehabilitation aids under supervision of Prosthetist & Orthotist (Category I professional).

3. Entry Requirement

Certificate from I.T.I. in any of the trades of fitter/carpenter/leather.

Or

10th class pass and two years of practical experience in a recognised P&O Centre under a P&O Professional.

4. Faculty

- (a) Teachers-student ratio of 1:6 is to be maintained.
- (b) Core Faculty : i) One Qualified Rehabilitation Professional in Prosthetics & Orthotics having Diploma in Prosthetics & Orthotics and 5 years of experience in Prosthetics & Orthotics workshop or 3 years of experience after having Degree in Prosthetics & Orthotics.

ii) One Instructor : Diploma in Prosthetics & Orthotics with 3 years of experience or Degree in Prosthetics & Orthotics.
- (c) Guest Lecturer : Two

5. Laboratory

- (a) It should be a limb fitting centre with minimum turnout of 30 cases per month of different kinds, excluding camps.
- (b) List of Prosthetics & Orthotics Equipments :

<u>Item</u>	<u>Qty.</u>
1) Wood workers vice	1
2) Pipe vice	1
3) Engineers surface plate	1
4) Carpenters augur	1
5) Chisels (various sizes)	1 each
6) Carpenters tools set	1 each
7) Fitters tools set	1 each
8) Calipers, dividers & compasses	1 each
9) Gauges	6
10) Allen Key set	1
11) Measurement table	1
12) Screw Drivers	1 set
13) Nut replacement tool 7 mm	1
14) Nut replacement tool 9 mm	1
15) Cold Chisel	1 set
16) Plastic mallet	2
17) Diagonal Cutter	1
18) Grip vice pliers	1
19) Plastic cutting saw	1
20) Band saw machine	1
21) Soldering Iron	1
22) Hammers for leather work	4
23) Pincers 6" Indian	2
24) Punch to break eyelet	2
25) Rampi straight type	4
26) Shoe makers anvil	2
27) Shoe awl	2
28) Scissors 9" for leather work	2
29) Top cutter 6" Indian super	1
30) Top cutter 8" Indian super	1
31) Metal cutting scissor 14"	1
32) Electric Iron (Press)	1
33) Number punch 0 to 9 ¼"	1 set
34) Spanner fix 1/8 to ½	2
35) Vice No. 32	1
36) Vice No. 40	1
37) Tabsets 1/8, 5/32, 3/16, 1/4, 7/64 B.S.W. with wrenches	1 each
38) Die set 1/8, 5/32, 3/16, 7/64 B.S.W. with wrenches	1 each
39) Wire files	1 set
40) File 12" Flat	1
41) Half round 12" rough	1
42) 12" Flat smooth	1
43) 12" half round smooth	1
44) 6" flat rough	1
45) 6" half round and smooth	1
46) 10" round rough and smooth	1

47) 10" Knife wedge rough	1
48) 10" Square rough	1
49) 8" rough marfa file	1
50) 8" second cut marfa file	1
51) 8" rough round marfa file	1
52) 14" all flat file	1
53) round nose	1
54) half round nose	1
55) flat nose	1
56) Tray square 150 mm	1
57) Wood marking gauge	1
58) Rif saw 70 mm 3 points	1
59) Cross cut saw 600 mm with 10 teeth/25 mm	1
60) Panel saw 500 mm with 10 teeth/25 mm	1
61) Tenon saw 250 mm with 13 teeth/24 mm	1
62) Chisels	1
63) Firmer flat	1
64) Bevelled edge	1
65) Paring chisel	1
66) Mortise chisel	1
67) Planes	1
68) Jack Plane (metal blade 350 mm with Blade 100 mm)	1
69) Spoke share	1
70) Machines	1
71) Bench drilling machine	1
72) Bolt & Disc sander	1
73) Hand shearing machine	1
74) Grinder wolf model T.G.6	1
75) Leather sawing machine motorised	1
76) Electric Oven 90x90x90 mm	1

Curriculum

A Medical Subjects

(1) Anatomy :

Introduction to :

- (a) Anatomy
- (b) Surface anatomy

- (c) Muscular system
 - (i) Different types of muscles
 - (ii) Attachment, nerve and blood supply, action (lower extremity) some for Upper Extremity trunk and Abdomen and spine.

- (d) Skeletal system
- (e) Basic biomechanics

(2) Physiology (Basic)

Introduction to :

- (a) Physiology
- (b) Circulatory system
- (c) Cardiac system – Heart and its function – Blood pressure – pulse, control of heat.
- (d) Respiratory system & structure of lungs – mechanism of Respiration
- (e) Urinary system, Mechanism of micturition
- (f) Digestive system, Mechanism of Defecation
- (g) Nervous system – Chief tracts – reflex action – Postural Reflex – Perepheral Nervous system.

(3) Surgery & Orthopaedics

Introduction to :

- (a) Surgery & Orthopaedics
- (b) Various levels of Amputation, both Upper Extremity & Lower Extremity
- (c) Examination of stump skin condition, sensation, contractures deformities, etc.
- (d) Congenital and acquired deformities
- (e) Disease of Nervous system – Poliomyelitis Obstetrical paralysis – spastic paralysis – Hemiplegia – Paraplegia – Pyogenic Infection – Leprosy – Chronic Arthritis – Neuropathic Arthritis – Metabolic Disease – Rickets – Avitaminosis
- (f) Disorders : Paralysis pain and deformities of spine foot and Upper Extremity.

(4) Physical Medicine & Rehabilitation

Introduction to :

- (a) Physical Medicine & Rehabilitation
- (b) Basic knowledge of Physical therapy/Occupational Therapy
- (c) Basic understanding of Human locomotion & Gait
- (d) CBR Concept in Rehabilitation, Govt. Schemes for rehabilitation and concretion to handicapped.

B. Workshop Practice Machines and Tools Material

- (a) Knowledge of operating and maintenance of different machines required in Limb Fitting Centres, such as Sewing machines, Ortho-vac, Grinders, Drill Machines, etc.
- (b) Hand tools like screw drivers, files, clamps, etc.
- (c) Special purpose tools
- (d) Material used in Othotics & Prosthetics such as Plastics, wood, aluminum, iron, rubber, foam, leather, etc.
- (e) Workshop safety and first aid
- (f) Handling and transportation of patients, disables

(1) Orthotics Lower

- (a) Orthotics Lower Extremity
- (b) Deformities, disorders and pains in lower extremity.
- (c) Nomenclature and knowledge of different type of orthosis their purpose of giving and check-up
- (d) Measurement – Casting – impressions –
- (e) Selection of components, assembly, alignment, check-up of different type of orthosis

(2) Orthotics Upper

- (a) Orthotics Upper Extremity
- (b) Deformities, disorders and pains in upper extremity.
- (c) Nomenclature and knowledge of different type of orthosis their purpose of giving and check-up
- (d) Measurement – Casting – impressions –
- (e) Selection of components, assembly, alignment, check-up of different type of orthosis

(3) Spinal Orthotics

- (a) Spinal Orthotics
- (b) Deformities, disorders and pains
- (c) Nomenclature and knowledge of different type of orthosis their purpose of giving and check-up
- (d) Measurement – Casting – impressions –
- (e) Selection of components, assembly, alignment, check-up of different type of orthosis

(4) **Prosthetics Upper**

- (a) Prosthetics Upper
- (b) Measurement – Casting – impressions –
- (c) Nomenclature and knowledge of different type of prosthesis their purpose of giving and check-up
- (d) Selection of components, assembly, alignment, check-up of different type of Prosthesis

(5) **Prosthetics Lower**

- (a) Prosthetics Lower
- (b) Measurement – Casting – impressions –
- (c) Nomenclature and knowledge of different type of prosthesis their purpose of giving and check-up
- (d) Selection of components, assembly, alignment, check-up of different type of Prosthesis

(6) **Mobility Aids & Other Appliances**

- (a) Wheel Chairs & Tricycle : Types, design, strength and special purpose wheel chair/Tricycle dimensions.
- (b) Crutches, Canes and Sticks : Measurements, Strength, types etc.
- (c) Walkers/other mobility aids : Measurements types, design, strength

C. **Visit**

To visit atleast one of the well established rehabilitation centres in the country, other than the place of work.

Sl. No.	Subjects	L	DP	Total Hours	Exam Hours
1.	Anatomy	40	--	40	3
2.	Physiology	8	--	8	
3.	Surgery & Orthopaedics	30	--	30	3
4.	Physical Medicine & Rehabilitation	10	9	19	
5.	Workshop Practice Machines and Tools, Materials	30	60	90	3
6.	Orthotics Lower	30	255	285	
7.	Orthotics Upper	10	100	110	3
8.	Spinal Orthotics	15	130	145	
9.	Prosthetics Upper	10	100	110	
10.	Prosthetics Lower	48	330	378	3
11.	Mobility Aids & Other Appliances	45	30	75	
		276	1014	1290	15
	Visit to other centres				
	Total working days in a year excluding vacation				
	Sundays & Holidays				
	*Number of days of the course	365	days		
	Less : No. of Gazetted holidays	16	days		
	No. of Sundays, Closed Saturdays (52+52)	104	days		
	Vacation break	30	days		
				365 – 150 days = 215 days	

L = Lecture, D = Demonstration, P = Practical, E = Examination
One Day = 8 periods (45 Minutes per period)

Note :

- Precis will be provided for each lecture.
- Practical work (Orthotics) : Each student will be given on the job training and will have to bend, assemble and fit 2 B.K. Orthosis, 2 A.K. Orthosis, and various types of splints (Bracing of feet deformities – shoe modifications, fabrication of shoes below knee Orthosis – Above knee Orthosis, knee cage, Bilateral Orthosis – Orthosis of upper limbs, Orthosis spinal).
- Practical Work (Prosthetics) :
 - Prosthetics : Each student will be given on the job training in the fabrication of socket, assembly, alignment and fitting on patients.
 - Lower Limb Prosthetics : Each student will be required to independently take cast of stump, modify cast, fabrication of socket, shaping of socket, assembly of components, static and dynamic alignment and gait analysis. At least two B.K. prosthesis and one A.K. prosthesis is to be fitted.
 - Upper Limb Prosthesis : At least two upper limb prosthesis are to be fitted after taking cast of stump, modification, fabrication of socket and assembly of all components with harness and control.

Certificate Course in Prosthetics & Orthotics

Examination Papers	External	Internal	Total
Theory			
1. Basic Clinical Science: (a) Anatomy (b) Physiology © P.M.R. (d) Surgery /Orthopedics	30	20	50
2. Workshop Practice, Machines and Tools Material	30	20	50
3. Orthotics (Lower, Upper & Spinal)	30	20	50
4. Prosthetics (Lower & Upper)	30	20	50
	120	80	200

Note: Internal Assessment marks based on performance of individual student through out the academic year. External Examination marks of theory exam conducted at the end of the year.

Practical:	Practical Internal Exam	Oral External Exam	Marks Total
1. Orthotics lower extremity, Upper extremity spinal Orthotics	90	60	150
2. Prosthetics lower extremity, upper extremity	90	60	150
Total	180	120	300

Note: Internal Practical Exam will be conducted at the centre prior to oral examination. Oral examination will be conducted in the presence of external examiner.

General guidelines for examinations are being issued separately.