



# **HIMALAYAN UNIVERSITY, ARUNACHAL PRADESH**

## **DIPLOMA IN PARAMEDICAL** **(CARDIOLOGY TECHNOLOGY)**

### **1<sup>st</sup> YEAR**

#### **1<sup>st</sup> Semester**

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	101	Communication Skills	30	70	100	40
3	102	Human Physiology	30	70	100	40
4	103	Human Anatomy	30	70	100	40
5	104	Practical	30	70	100	40

#### **2<sup>nd</sup> Semester**

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	201	General Pathology	30	70	100	40
2	202	General Pharmacology	30	70	100	40
3	203	General Microbiology	30	70	100	40
4	204	Practical	30	70	100	40

### **2<sup>nd</sup> YEAR**

#### **3<sup>rd</sup> Semester**

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	301	Clinical Cardiology	30	70	100	40
2	302	Preventive Medicine	30	70	100	40
3	303	General Medicine and Surgery	30	70	100	40
4	304	Practical	30	70	100	40

#### **4<sup>th</sup> Semester**

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	401	Cardiology OPD	30	70	100	40
2	402	Laboratory and ICU	30	70	100	40
3	403	Diagnostic Techniques	30	70	100	40
5	404	Practical	30	70	100	40

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## **DIPLOMA IN PARAMEDICAL** **(CARDIOLOGY TECHNOLOGY)**

### **1<sup>st</sup> YEAR**

### **1<sup>st</sup> Semester**

### **Communication Skills (101)**

#### **1. Course Description**

This course is designed to help the student acquire a good command and comprehension of the English language through individual papers and conferences.

#### **2. Behavioural objectives**

The student at the end of training shall be able to:

- a) Read and comprehend English language.
- b) Speak and write grammatically correct English.
- c) Appreciate the value of English literature in personal and professional life.

#### **3. Contents**

##### **UNIT - I: Introduction:**

- a) Study techniques.
- b) Organisation of effective note taking and logical processes of analysis and synthesis.
- c) Use of the dictionary.
- d) Enlargement of vocabulary.
- e) Effective diction.

##### **UNIT - II: Applied grammar:**

- a) Correct usage.
- b) The structure of sentences.
- c) The structure of paragraphs.
- d) Enlargements of vocabulary.

##### **UNIT - III: Written composition:**

- a) Precise writing and summarizing.
- b) Writing of bibliography.
- c) Enlargement of vocabulary.

##### **UNIT - IV: Reading and comprehension:**

- a) Review of selected materials and express oneself in one's words.
- b) Enlargement of vocabulary.

**UNIT - V: The Study of the various forms of composition:**

- a) Paragraph.
- b) Essay.
- c) Letter.
- d) Summary.
- e) Practice in writing.

**UNIT - VI: Verbal communication:**

- a) Discussions and summarization.
- b) Debates.
- c) Oral reports.
- d) Use in teaching.

**Reference**

1. English Grammar: Collins, Birmingham University, International Language Data Base, Rupa & Co. 1993.
2. Wren and Martin: Grammar and Composition, 1989, Chand & Co, Delhi.
3. Letters for all Occasions: A S Myers. Pub - Harper Perennial.
4. Spoken English: V. Shasikumar and P V Dhanija. Pub. By: Tata Mcgraw Hill, New Delhi
5. Journalism Made Simple: D Wainwright.
6. Writers Basic Book self Series: Writers Digest series.
7. Interviewing by Joan Clayton Platkon.
8. Penguin Book of Interviews.

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**Human Physiology (102)**

**UNIT-1**

Definition & introduction of Physiology

Concept of cell, tissue, organ & system.

**UNIT-2**

Connective Tissues,;- its type ,function

**UNIT-3**

Muscular System:-

Definition, structure

Function & types

#### **UNIT-4**

**CARDIOVASCULAR SYSTEM:-** ,

Heart, its position structure

Conduction system,

Nerve supply & blood supply.

Blood Vessels: - Structure, differences,

Position of chief vessels, function.

Lymphatic system

Circulation of blood:- systemic circulation

Pulmonary & portal circulation

Cardiac output, Stroke Volume

Blood Pressure, Pulse Rate, Cardiac cycle .

Detail description of blood, Blood group

B.P. measurement, temperature

Pulse & respiratory rate measurement.

#### **UNIT-5**

**Respiratory System:-**

Respiration, Physiology

Lung volume & lung capacity

#### **UNIT-6**

**Digestive System:-**

Process of Mastication, Deglutition,.

Digestion & absorption

Metabolism of food constituents

#### **UNIT-7**

**Urinary System: -** ,

Physiology of blood filtration&micturition.

Regulation of body temperature.

Fluid & electrolyte balance.

#### **UNIT-8**

Nervous System:- Introduction .

Classification, structure & function

### **UNIT-9**

Sense Organs:-

Structure & function of:-

Eye

Ear

Nose

Skin

Tongue

### **UNIT-10**

FEMALE REPRODUCTIVE SYSTEM:-

Menstrual cycle, function of each organ

MALE REPRODUCTIVE SYSTEM:-

External & Internal organs

### **UNIT-11**

Endocrine System: - ,

Structure & function of:-

Pituitary Gland

Thyroid, Parathyroid Gland

Pancreas, Thymus & Suprarenal Gland.

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## **Human Anatomy (103)**

### **UNIT-1**

Definition & branches of Anatomy

Introduction of anatomical terms

Concept of cell, tissue, organ & system.

### **UNIT- 2**

Skeletal system:-

Bones: - Definition, structure function & types Detail study of structure of regional bone

Joint: - Definition, classification, Structure, movements

### **UNIT-3**

Muscular System: - Definition, structure  
function & types  
Different muscular position & action.

#### **UNIT-4**

Cardiovascular System: - Introduction  
Heart & blood vessels, its position  
Structure ,Conduction system  
Nerve supply & Blood supply.  
Blood Vessels:- Structure, differences  
Position of chief vessels, function  
Circulation of blood: - Systemic  
Pulmonary & portal circulation

#### **UNIT- 5**

Respiratory System: - Structure, Position  
Function of respiratory organs

#### **UNIT-6**

Digestive System: - Structure, Position  
Function of digestive organs

#### **UNIT-7**

Urinary System: - Position, structure  
Function of organs of Urinary system

#### **UNIT-8**

Nervous System: - Introduction & Part  
Structure of nervous system  
Function of nervous system.

#### **UNIT- 9**

Sense Organs:-  
Structure & function of:-  
Ear  
Eye  
Nose

Skin

Tongue

## UNIT-10

### FEMALE REPRODUCTIVE SYSTEM

External & Internal organs

### MALE REPRODUCTIVE SYSTEM

External & Internal organs

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### Practical (104)

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## 1<sup>st</sup> YEAR

### 2<sup>nd</sup> Semester

### General Pathology (201)

Definition, Role, Scope of Pathology.

Inflammation-its stage & sign.

Shock.

Introduction of Hemorrhage,

Thrombosis, Embolism.

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### General Pharmacology (202)

Definition, Role, Scope of Pharmacology.

General Pharmacokinetics

General Pharmacodynamics

Drugs acting on Cardio-vascular system.

Drugs acting on Respiratory system

Drugs acting on Nervous system

Antibiotics.

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### General Microbiology (203)

Definition & Role

Scope & branches

Bacteriology:-

Shape, Size & structure of bacteria

Infection:-

Definition, Types of infection

Source of infection

Mode of transmission of infection

Immunity: -

Definition & Types in detail,

Immunization schedule.

Sterilization & Disinfectant

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**Practical (204)**

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**2<sup>nd</sup> YEAR**

**3<sup>rd</sup> Semester**

**Clinical Cardiology (301)**

Cardiac Arrhythmia

Congenital heart disease

Infective Endocarditis

Valvular diseases.

Ischemic heart disease.

Cardiac arrest.

Heart Failure.

Hypertension

Pericarditis.

Myocarditis.

Peripheral vascular diseases.

Shock.



Health & heart diseases, Epidemiology of heart disease.

Early detection, Prevention & treatment of heart disease

Common warning signs of heart diseases

Obesity

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### **Preventive Medicine (302)**

1. Anti-anginal agents Beta blockers-propranolol, atenolol, metoprolol, bisoprolol carvedilol, esmolol.

Nitrates-nitroglycerine, isosorbide dinitrate, isosorbide mononitrate, transdermal nitrate patches Calcium channel blockers-nifedipine, verapamil, diltiazem, amlodipine

2. Anti-failure agents Diuretics-furosemide, torsemide, thiazide diuretics, metolazone, spironolactone, combination diuretics

Angiotensin converting enzyme (ACE) inhibitors – captopril Enalapril, ramipril, lisinopril, ACE inhibitors for diabetics and hypertensive renal disease

Digitalis and acute ionotropes – digoxin, dobutamine, dopamine, adrenaline, noradrenaline, isoprenaline

3. Anti-hypertensive drugs Diuretics, beta-blockers, ACE inhibitors, calcium antagonists, direct

Vasodilators, centrally acting and peripherally acting vasodilators.

4. Anti-arrhythmic agents

Amiodarone, adenosine, verapamil, diltiazem, lidocaine, mexiletine, Phenytoin, flecainide, bretylium, atropine

5. Antithrombotic agents

Platelet inhibitors: aspirin, clopidogrel

Anticoagulants: heparin, low molecular weight heparin, warfarin

Fibrinolytics: streptokinase, urokinase

Glycoprotein 2b3a antagonists: abciximab, tirofiban, eptifibatide

6. Lipid lowering and anti-atherosclerotic drugs: statins, ezetimibe, niacin, fenofibrate

7. Miscellaneous drugs Protamine

Narcotics: morphine, pethidine, fentanyl

Sedatives: diazepam, midazolam

Steroids: hydrocortisone, prednisolone,

Antihistamines: diphenhydramine

Antibiotics: penicillins, cephalosporins, aminoglycosides

Antacids and proton pump inhibitors

Anaesthetic agents: local general

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### **General Medicine and Surgery (303)**

## **UNIT-1**

### **INFECTIOUS & COMMUNICABLE DISEASES:-**

Typhoid fever, Malaria, Tetanus, Diphtheria, Leprosy

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Mumps, Measles, Cholera, Rubella

Gonorrhoea, Syphilis, AIDS,.

Rheumatic fever

## **UNIT-2**

### **METABOLIC DISORDER:-**

Diabetes, Obesity, Gout.

## **UNIT-3**

### **· DISEASES OF ENDOCRINE SYSTEM:-**

Hyper & Hypo -secretion of Thyroid, Parathyroid Gland

Hypo & hyper secretion of Pituitary & Adrenal Gland.

## **UNIT-4**

### **· DISEASES OF NERVOUS SYSTEM:-**

Headache, Meningitis, Encephalitis, Poliomyelitis, Parkinsonism, Epilepsy

CVA, Tumor.

## **UNIT-5**

### **· DISEASES OF GIT:-**

Gastric ulcer, Peptic Ulcer, Gastritis .Hiatus Hernia, ,

Hepatitis , Cirrhosis of liver, Hepatic coma

Pancreatitis, Enteritis, Colitis, Splenomegaly

Cholecystitis, Cholelithiasis.

## **UNIT-6**

### **· DISEASES OF BLOOD:-**

Anemia, Leukaemia, Haemophilia.

Agranulocytosis, Hodgkin's disease

## **UNIT-7**

### **DISEASES OF CARDIOVASCULAR SYSTEM:-**

Pericarditis, Myocarditis, endocarditis

IHD, Valvular disorders,  
Cardiac arrhythmia, Heart block,  
Cardiac arrest, Cardiac failure

### **UNIT-8**

DISEASES OF EAR NOSE & THROAT:-

Otitis, Otosclerosis, Furunculosis, Fungal infections,  
Injury, Wax, Mastoiditis , Otosclerosis.

Menier's disease, Deafness.

Laryngitis, Pharyngitis, Tonsilits Allergic rhinitis.

Rhinitis, Defleted nasal septum, Sinusitis, Adenoids,

### **UNIT-9**

· DISEASES OF RESPIRATORY SYSTEM:-

Tuberculosis ,Pneumonia,

Pleural effusion, Pleurisy, Empyaema,

COPD.

### **UNIT-10**

DISEASES OF EYE:-

Conjunctivitis, Dacrocystitis, Glaucoma,

Cataract, Retinal detachment.

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**Practical (304)**

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**2<sup>nd</sup> YEAR**

**4<sup>th</sup> Semester**

**Cardiology OPD (401)**

Type of catheters

Catheter cleaning and packing

Techniques of sterilization-advantages and disadvantages of each

Setting up the cardiac catheterization laboratory for a diagnostic study

Table movement

Image intensifier movement  
Image play back  
Intra cardiac pressures  
Pressure recording systems  
Fluid filled catheters versus catheter tipped manometers  
Artifacts, damping, ventricularization  
Pressure gradient recording – pullback, peak – to peak  
Cardiac output determination  
Thermo dilution method  
Oxygen dilution method  
Principles of oximetry  
Shunt detection and calculations.  
Coronary angiography  
Coronary angiographic catheters  
Use of the manifold  
Angiographic views in coronary angiography  
Laboratory preparation for coronary angiography  
Left Ventriculography – catheters, views, use of the injector  
Right heart catheterization and angiography

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### **Laboratory and ICU (402)**

Introduction, Emergency tray, Drugs used in emergency,  
Cardiopulmonary resuscitation  
Respiratory distress,  
IV Infusion & precaution, OPD Record keeping  
ICU: - Introduction, structure, Furniture.  
Utensils used,  
Assessment of patient condition, treatment protocol  
Medicines used in ICU & ITS role  
Repair; stand by power arrangement of beds

Trays & trollys & attendants space  
Infections & disinfectant procedures,  
Sterilization of ICU articles & Room  
Importance of Disinfectant & sterilization,  
Detail of Types mode & Source of infections in ICU.  
Use of antiseptic technique.  
Diet & nutrition of patient.  
Duty record, division of work, disposal of materials,  
Collection & transportation of body sample  
Minor routine & emergency procedures like RT,,  
Catheterisation, enema ,  
Oxygen application  
laryngoscope & tracheotomy  
Routine cleaning of ICU,  
Precaution during patient transfer.  
Admission protocol.  
Record keeping  
Operative preparation.  
Electric & fire hazards.  
Recovery room .  
Stock maintenance of the department.  
Emergency disaster & death.  
Mobile ICU  
Medico legal aspect.

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### **Diagnostic Techniques (403)**

Investigations done in heart diseases.  
Instruments used in cardiology- stethoscope  
Sphygmomanometer, Thermometer, ECG Machine  
Cardiac monitors, control monitor system,  
External Pacemaker, Paediatric ECG Recording,

, Reading of normal & abnormal ECG.

Stress ECG recording..

Introduction to cardiac catheterization

Control oxygen & section unit, TMT,

Echo, Ultrasound dropper,

Demonstration of working of all instruments & using it.

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**Practical (404)**

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