

**B.Sc. Physician Assistant**

**Syllabus**

**2015-16**

**KLE University,**

**BELAGAVI.**

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## **SECTION -I**

### **PREAMBLE**

A physician assistant (PA) is a health care professional qualified by academic and clinical training to assist doctors in the diagnostic, therapeutic and surgical treatment of patients. The PA works under the supervision of a qualified and licensed physician or surgeon.

### **GOALS OF THE COURSE**

While planning for Reduction of cost of surgeries, better patient care, we need to train the personnel for proper & specific work. The training especially includes for Pre- operative investigations (Invasive & Non-Invasive) operative help & care / post-operative care. The personnel having basic knowledge of medical science will be trained for specific work. This will reduce the overall cost of surgeries without compromising patient's safety & management.

### **AIMS AND OBJECTIVES OF THIS COURSE**

#### **Need for trained physician assistants:**

PA's are needed in the present day medical care in India for the following reasons;

- a. PA profession is a solution to the nation's shortage of health personnel.
- b. PA profession is a means to provide job for bright and dedicated candidates who have a strong urge to serve fellow human beings but could not enter medical school.
- c. PA profession is a way to saving costs on medical education
- d. PA profession is a means of saving health care consumer's money.
- e. PA profession is an easy way of providing primary, preventive and emergency medical care.
- f. PA profession ultimately is a means of improving quality of health care which is available accessible and affordable.

## **REGULATIONS GOVERNING**

### **1. Eligibility:**

#### **Direct Entry:**

Pass in PUC with biological sciences (with 50 % marks in biology) biological sciences subjects will be considered under exceptional circumstances.

#### **Lateral Entry:**

Candidates who have passed Diploma in Operation Theatre Technology or who have obtained Doctor's degree in BHMS / BAMS will be considered for lateral entry.

### **2. Intake of the Student: 20 Nos.**

### **3. Medium of Instructions: English**

### **4. Duration of the course Study:**

3 years + 6 months of compulsory internship for direct entry

2 years + 6 months of compulsory internship for lateral entry

### **5. Attendance and Progress: 80%**

### **6. COURSE CONTENT:**

#### **Subjects:**

**First year:** Anatomy, Physiology, Microbiology, Biochemistry, Pathology, English, Inservice Training I (Laboratory Rotation)

**Second year:** Medicine, Pharmacology, Pediatrics, Biostatistics, Surgery, Anesthesiology, Inservice Training II (Clinical Department Rotation)

**Third year:** Cardiology and Cardiac Surgery, Neurology, Nephrology/Pulmonology, Gastroenterology/Orthopaedics, Inservice Training III (Surgical Department Rotation)

## **7. University Examination**

There shall be one university examination at the end of the year. There shall be three theory papers and a practical in final examination. Each paper would be three hours duration carrying 100 marks. A candidate has to score a minimum 50% of maximum marks in each subject (theory & practicals) including internal assessment for passing the examination. Candidate who fail in one or more subjects have to appear in all subjects in the subsequent examinations.

## **8. Criteria for Pass**

For declaration of pass at the University examination, a candidate shall pass both in Theory and Practical Examinations separately in the same examination and as stipulated below: A candidate must obtain 50% in aggregate with a minimum of 50% in Theory and minimum of 50% in practical in each of the subjects.

## **9. Declaration of class**

A successful candidate obtaining 65% marks or more but less than 75% of marks in the aggregate of all the subjects in the first attempt will be declared to have passed the examination in First Class. Successful candidates obtaining 75% of marks or more in the aggregate of all the subjects in first attempt will be declared to have passed the examination in distinction. A candidate obtaining 50% and more, but less than 65% of the marks in the grand total aggregate in the first attempt shall be declared to have passed the examination in Second class. A candidate passing a university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured by him/ her in the examination.

## **10. Examiners**

The panel of examiners shall consist of 2 examiners (one internal and one external).

## **11. Eligibility To Become An Examiner**

Sr. Teacher with adequate teaching experience as per MCI rules

## SECTION -II

### Course Content and Scheme of Examination of

### 1<sup>st</sup> year B.Sc Physician Assistant

#### ANATOMY

**THEORY: 50 Hrs.**

**PRACTICALS: 25 Hrs.**

**Unit 1 The human body as a whole:** Definitions, Subdivisions of Anatomy, Terms of location and position, Fundamental planes, Vertebrate structure of man, organization of the Body Cells and Tissues.

**Unit 2 Locomotion and support: *The Skeletal system:*** Types of bones, structures and growth of bones, Divisions of the skeleton, Appendicular skeleton, Axial skeleton, name of all the bones and their parts, joint- classification, types of movements with examples.

Unit 3 ***Central nervous system:*** Spinal Cord Anatomy, functions, reflex- arc, Meninges.

***The Brain-*** Hind Brain, Midbrain, Forebrain. Brief structure, location, functions, and Peripheral nervous system. Injuries to spinal cord and brain.

Unit 4 **Circulatory system: *Heart :*** size, location, coverings, chambers, Blood supply, Nerve supply, the blood vessels, General plan of circulation, pulmonary circulation , Names of arteries and veins and their positions, lymphatic system , general plan.

**Unit 5 Respiratory system:** Organs of Respiratory System, Conducting portion, ***Nose:*** nasal cavity, Para nasal air sinuses, Larynx, trachea, bronchial tree, Pleurae and lungs, Brief knowledge of parts and position.

**Unit 6 Digestive system:** Components of Digestive system, Alimentary tube, Anatomy of organs of digestive tube, mouth, tongue, tooth, salivary glands, liver, Biliary apparatus, pancreas, Names and positions and brief functions.

**Unit 7 Excretory system and Reproductive system: Kidneys:** location, gross structure, excretory ducts, ureters, Urinary bladder, Urethra. Male Reproductive System: Testis, Duct system. Female Reproductive System: Ovaries, Duct system, Accessory organs.

Unit 8 **Endocrine system:** Name of all endocrine glands their positions, Hormones and their functions- Pituitary, Thyroid parathyroid, Adrenal glands, Gonads & Islets of pancreas.

## **Practicals**

**Gross Anatomy:** Demonstration of Different Organs

**Histology: General slides.**

1. Hyaline Cartilage.
2. Fibro Cartilage.
3. Elastic Cartilage.
4. T.S. & L.S. of Bone
5. Blood Vessels.
6. Tonsil
7. Spleen
8. Thymus
9. Lymph node
10. Epithelial Tissue
11. Skeletal and Cardiac Muscle
12. Peripheral nerve and optic nerve.

**X. Systemic slides:**

1. G.I.T – all
2. R.S. – Lung, Trachea
3. Kidney
4. Endocrine glands – Adrenal, Pancreas, Pituitary, Thyroid and Parathyroid
5. Uterus, Ovary, Testis.

### Recommended Text Books (Latest Edition)

<b>Name of the Books &amp; Title</b>	<b>Author</b>	<b>Publisher's Name, Place of Publication</b>
1. Human Anatomy Regional and Applied. Vol. 1, Vol.2 & Vol.3	B.D.Chaurasia	C.B.S.Publishers, New Delhi
2. Hand Book of General Anatomy	B.D.Chaurasia	C.B.S.Publishers, New Delhi
3. Text Book of Human Histology	Inderbir Singh	Jaypee Brothers, Medical Publishers, Delhi
4. Clinically Oriented Anatomy	Keith L. Moore	Williams and Wilkins, Baltimore
5. Gray's Anatomy	Susan Standring	Elsevier Churchill Livingstone, Edinburg



# 1<sup>st</sup> year B.Sc Physician Assistant

## PHYSIOLOGY

**Theory: 50 Hrs**

**Practical: 25 Hrs**

**Unit 1 Blood:** Composition, properties and functions of Blood, Haemopoiesis, Haemogram (RBC, WBC, Platelet count, Hb Concentrations), Blood Groups - ABO and RH grouping  
Coagulations & Anticoagulants, Anaemias: Causes, effects & treatment, Body Fluid: Compartments, Composition, Immunity – Lymphoid tissue

**Unit 2 Cardio vascular system:** Functions of Cardiovascular System, Structures of CVS & Functions, Functional Anatomy of Heart & their functions, Cardiac cycle, junctional tissues of heart & their functions, Cardiac output, E C G, Blood pressure, Heart Rate.

**Unit 3 Digestive system:** Functions of Digestive system, Functional Anatomy of Digestive System, Composition and functions of all Digestive juices, Movements of Digestive System (Intestine), Digestion & Absorption of Carbohydrate, Proteins & Fats.

**Unit 4 Respiratory system:** Functions of Respiratory system, Functional anatomy of Respiratory System., Mechanism of respiration, Lung Volumes & capacities, Transport of Respiratory Gases.

**Unit 5 Nervous system:** Functions of Nervous system, Neuron – Conduction of Impulses, factors affecting, Synapse- transmission, Receptors, Reflexes, Ascending tracts, Descending tracts, Functions of various parts of the Brain, Cerebrospinal Fluid (Composition, functions & Circulation), Lumbar Puncture. Autonomic Nervous System

**Unit 6 Special senses:** Vision - Structure of Eye, functions of different parts, Refractive errors of Eye and correction, Visual Pathway, Colour vision & tests for colour Blindness. Hearing: Structure and function of ear, Mechanism of Hearing, Tests for Hearing, Deafness.

**Unit 7 Muscle nerve physiology:** Types of Muscle, Structure of skeletal Muscle, sarcomere. Neuromuscular junction & Transmission, Excitation & contraction coupling

**Unit 8 Skin:** Structure and function, Body temperature, Fever, Regulation of Temperature

**Unit 9 Excretory System:** Excretory organs, Kidneys: Functions, Nephron, Juxta-glomerular Apparatus, Renal circulation, Mechanism of Urine formation, Micturition., Cystogram, Diuretics, Artificial Kidney.

**Unit 10 Reproductive System:** Structure & Functions of Reproductive system. Male Reproductive System: Spermatogenesis, Testosterone.

Female reproductive system: Ovulation, Menstrual cycle, Oogenesis, Tests for Ovulation, Oestrogen & Progesterone, Pregnancy test, Parturition, Contraceptives, Lactation, Advantages of breast Feeding.

**Unit 11: Endocrine System:** Definition of Local and General Hormone, Properties of hormones- Major Endocrine glands of the body and their location. Anterior and Posterior pituitary Hormones. Function of each one of them. Dwarfism, Acromegaly, Gigantism. Posterior Pituitary ADH and oxytocin functions, Diabetes Insipidus. Physiological anatomy and Functions of Thyroid gland and Hormones secreted. Disorders: Hypo and Hyper secretion- Goiter, Cretinism, Myxoedema, Graves Disease. Adrenal Cortex: Hormones secreted, Glucocorticoids, Mineralocorticoids, Sex Steroids and their functions. Addison's disease, Cushing's Syndrome, Conn's Syndrome, Adrenogenital syndrome. Functions of adrenaline and nor adrenaline., Pheochromocytoma. Hormones of Pancreas, Functions of Insulin and Glucagon. Diabetes Mellitus. Regulation of Blood Glucose levels. PTH functions and actions. Regulation, Hypo and Hyper secretion, Tetany. Function of Calcitonin and regulation of blood calcium level.

## **PRACTICALS**

**25 hours**

Study of Microscope and its use

Collection of Blood and study of Haemocytometer

Haemoglobinometry

Determination of Specific gravity of Blood

White Blood Cell count

Red Blood Cell count

Determination of Blood Groups

Leishman's staining and Differential WBC Count

Determination of Packed cell volume

Calculation of Blood indices

Fragility Test for R.B.C.

Determination of Bleeding Time.

Determination of Clotting Time.

Blood Pressure Recording

Auscultation for Heart Sounds

Artificial Respiration

Determination of vital capacity

### Recommended Text Books (Latest Edition )

<b>Name of the Book &amp; Title</b>	<b><u>Author</u></b>	<b>Publisher'sName, Place of Publication</b>
1.Text book of Physiology	Guyton (Arthur C)	Prism Publishers Bangalore.
2. Human Physiology	Chatarjee(CC)	Medical allied agency
3. Concise Medical Physiology	Choudhari ( Sujit K)	New central books Calcutta
4. Review of medical Physiology,	Ganong	Appliton and Lange,
5.Human Physiology	Vander	-
6. Human Physiology	Prof A K Jain	Avichal Publishing company
7. Practical physiology	Prof A K Jain	Arya Publications

# 1<sup>st</sup> year B.Sc Physician Assistant

## BIOCHEMISTRY

Theory

50 hours

Unit 1 Introduction to Apparatus, Chemical Balance: Different types, Principles and Practice, Concepts of Molecular weight, Atomic weight, Normality, Molarity, Standards, Atomic structure, Valence, Acids, Bases, Salts, & Indicators, Concepts of Acid Base reaction and hydrogen ion concentration. pH meter & pH buffer.

Unit 2 Chemistry of Carbohydrates: Definition, Classification and biological importance. Classification and Properties of Monosaccharides, Oligosaccharides, Disaccharides & Polysaccharides

Unit 3 Chemistry of Lipids: Definition, Classification and biological importance. Simple lipids: Triacylglycerols and waxes-composition and functions. Compound lipids: Phospholipids, Sphingolipids & Glycolipid: composition and functions. Derived lipids: Fatty acids — saturated & unsaturated. Steroids and their properties.

Unit 4 Chemistry of Proteins: Classification and examples. Amino acids: Classification, properties, side chains of amino acids, charge properties. Protein: Definitions, Classifications and functions. Peptides: Biologically active peptides — Examples such as GSH, Insulin— its structure. Structural organization, conformation and denaturation,

Unit 5 Chemistry of Nucleic acids: DNA Structure and function, RNA Types: Structure and function.

### **Practicals:**

**25 HOURS**

1. Introduction to apparatus, Instruments and use of Chemical Balance.
2. Preparation of solutions, calculation of Molecular Weights and Equivalent Weights, Preparation of Normal solutions, Molar solutions, percent solution and reagents, dilution techniques.
3. Maintenance of Laboratory Glassware and apparatus.
4. Titration of simple acid-base and calculation of Normality.
5. Measurement of hydrogen ion concentration.
6. Qualitative analysis. Identification of Carbohydrates, Proteins & substances of Biochemical importance.
7. Demonstration of colorimeter, spectrophotometer, pH meter, single pan balance.

## **RECOMMENDED TEXT BOOKS ( Latest Edition )**

1. VARLEY, Clinical Chemistry ,William Heinemann Medical Books Ltd and Inter Science Book. Inc. New York.
2. TEITZ, Clinical Chemistry, W.B. Saunders Company Harcourt(India) Private Limited New Delhi-110048.
3. KAPLAN, Clinical Chemistry, The C.V.Mosby Company, St. Louis Washington, D.C. Toronto.
4. RAMKRISHAN (S), PRASANNA (KG), RAJAN (R), Text Book of Medical Biochemistry, Orient Langman, Bombay.
5. VASUDEVAN (DM) and SREE KUMARI (S), Test Book of Bio Chemistry for Medical Students, Jaypee Brothers, New Delhi.
6. Biochemistry, U. Satyanarayan, Books and Allied (P) Ltd. Kolkata-700009(India)
7. DAS (Debajyothi), Biochemistry, Academic Publishers Calcutta.

# 1<sup>st</sup> year B.Sc Physician Assistant

## PATHOLOGY

### THEORY

- 50 Hours

### PATHOLOGY - (HAEMATOLOGY & CLINICAL PATHOLOGY)

#### Unit 1 HAEMATOLOGY

Introduction:

1. Blood collection
2. Anticoagulants used in Haematology
3. Normal values in Haematology
4. Basic Haematological Techniques
  - a. RBC count
  - b. Haemoglobin estimation
  - c. Packed cell volume
  - d. Calculation of absolute indices
  - a. WBC counts-Total and differential.
  - e. Absolute eosinophil count
  - g. Platelet count
  - h. Erythrocyte sedimentation rate
  - I. Reticulocyte count
5. Preparation of blood films
6. Stains used in Haematology
7. Morphology of red cells
8. Morphology of Leukocytes and platelets
9. Bone marrow
  - a. Techniques of aspiration, preparation and staining of films
  - b. Bone marrow biopsy
10. Preparation of buffy coat smears
11. Laboratory methods used in the investigation of anaemias
  - a. B 12 and folate assay
  - b. Schilling test
  - c. Serum iron and iron binding capacity
12. Laboratory methods used in investigation of haemolytic anaemias
  - a. Osmotic fragility
  - b. Investigation of G-6 PD deficiency
  - c. Test for sickling
  - d. Estimation of Hb-F, Hb-A2

- e. Plasma haemoglobin and Haptoglobin, demonstration of haemosiderin in urine.
- f. Haemoglobin electrophoresis
- g. Test for auto immune hemolytic Anaemias.  
Measurements of abnormal Hb pigments

**Unit 2 CLINICAL PATHOLOGY:**

- 1. Urine examination  
Physical, Chemical & Microscopic
- 2. Examination of body fluids, cell counts
- 3. Semen analysis
- 4. CSF (Cerebro Spinal Fluid)
- 5. Stool Examination.

**Practical:**

**- 25 hours**

**I. HAEMATOLOGY**

Hb Estimation-Sahli's method & Cyanmethhaemoglobin method

RBC Count

Retic Count

Preparation of blood smears and staining with Leishman stain

WBC Count

WBC –Differential Count

Platelet Count

Absolute Eosinophil Count

ESR- Westergreens & Wintrobe's method,

PCV.

Sickling test-Demonstration

Bone Marrow Smear preparation & staining procedure- Demonstration

Demonstration of Malarial Parasite.

## **II. CLINICAL PATHOLOGY**

### 1. Urine examination

Physical

Chemical

Microscopic

### **Reference books ( Latest Edition )**

Sl.No	Name of Book & title	Author	Publisher,Name, place of publication
1	Practical Pathology	P. Chakraborty Gargi Chakraborty	New Central Book Agency, Kolkotta
2.	Text Book of Haematology	Dr. Tejinder Singh	Arya Publications, Sirmour (H.P)
3.	Text Book of Medical Laboratory Technology	Praful Godkar	Bhalani Publication House, Mumbai
4.	Practical Haematology	Sir John Dacie	Churchill Livingstone,London
5.	Todd & Sanford, Clinical Diagnosis & Management by Laboratory Methods	John Bernard Henry	All India travellar Booksellar, Delhi.



# 1<sup>st</sup> year B.Sc Physician Assistant

## MICROBIOLOGY

**Theory: 50 hours**

**Unit 1 Principles of Microbiology:** General introduction, and History of Microbiology

**Unit 2** Microscope-Different types including electron microscope.

Unit 3 Classification of Microbes

Unit 4 Bacterial cell, Bacterial Growth and Nutrition, Bacterial Metabolism, Bacterial Genetics and Variation, Antibacterial Agents, and Anti-Septics & Disinfection (Chemical Sterilization), Sterilization (Physical) – Heat, Filters, Radiation, Antibiotics, Chemotherapy and Drug Resistance, Collection & Transportations of Specimens.

**Practical: 25 hours**

**Bacteriology :**

- Operation of microscope and handling of equipments and instruments required for routine lab work.
- Morphology of bacteria
- Hanging drop & simple staining
- Simple stains – Gram stain, & Ziehl – Neelsen’s stain
- Demonstration of culture media and Antibiotic sensitivity test

### **Recommended Text Books (Latest Edition )**

1. Ramanik Sood, Laboratory Technology (Methods and Interpretations) J.P. Bros, New Delhi,
2. Wedling Medical Laboratory Procedures, J.P. Bros, New Delhi.
3. Sachdev K N, Clinical Pathology & Bacteriology, J.P. Bros, New Delhi
4. Chatterjee K.D. Parasitology – in relation to clinical medicine, Chatterjee Medical publication, Calcutta.
5. Rippon, Medical Mycology, W.B Saunders.
6. Emmons, Medical Mycology, W.B Saunders.
7. Basic Laboratory Methods in Parasitology, J.P. Bros, New Delhi
8. Ananthnarayan & Panikar, Text book of Medical Microbiology,
9. Robert Cruickshank, Medical Microbiology – The practice of Medical Microbiology, ELBS,
10. Basic Laboratory Procedures in Clinical Bacteriology, J.P. Brothers, New Delhi.
11. Prof. C.P. Baveja, Text Book of Microbiology, Arya Publication,
12. Dr. C.N. Dey, Dr. H.L.E. Gruebov & Dr. T.K. Dey, Medical Mycology, New Central Book Agency (P) Ltd. Kolkata,
13. D.R. Arora Text book of Microbiology, CBS Publications, New Delhi,
14. Prof. C.P. Baveja, Practical Microbiology, Arya Publications.
15. Rajesh Karyakarte & Ajit Damle, Medical Parasitology, Books & Allied (P) Ltd. Kolkata.
16. P. Chakraborty Medical Parasitology, New Central Book Agency (P) Ltd, Kolkata.
17. Dr. Arora & B. Arora, Medical Parasitology ,CBS Publications, New Delhi.

## ENGLISH

### COURSE CONTENTS:

Subsidiary subject 60 hours for 1st year marks to be sent to university before IInd year exam.

Course description: It is designated to help the students to acquire a good command over English language for common and medical terminology used in medical practice.

Behavioural objectives:

Ability to speak and write proper English

Ability to read and understand English

Ability to understand and practice medical terminology, Paragraph and Letter writing, Note making, Description, The use of paragraphs, Essay writing, Telegrams, Precise-writing and abstracting, Report writing.

Medical Terminology and Use of dictionary

### **Text books recommended (Latest Edition )**

V.R.Narayana, Sharma Strengthen your writing, New Delhi, Orient Longman

When and Martin – Grammar and composition, Delhi, Chand & Co.

Shashikumar V., D'Souza P.V, Spoken English, New Delhi, Tata Mergaw Hill

Dorland's pocket Medical dictionary ,New Delhi; Oxford & IBH Publishing Co.

**SUBJECTS, NUMBER OF YEARS OF STUDY AND SCHEME OF EXAMINATION :  
TABLE : FIRST YEAR B.SC. ALLIED HEALTH SCIENCE COURSES:**

**Subjects for examination and distribution of marks**

Sl. No	Subjects	Teaching No. of Hours		University Examination	I.A	University Practicals	I. A	Viva-voce	Total
		Theory	Practical	Theory		Practical			
1.	Anatomy	50	25	80	20	65	20	15	200
2.	Physiology	50	25	40	10	30	10	10	200
	and Biochemistry	50	25	40	10	30	10	10	
3.	Pathology	50	25	40	10	30	10	10	200
	And Microbiology	50	25	40	10	30	10	10	
<b>Total</b>								<b>600</b>	
<b><u>Subsidiary Subjects</u> *</b>									
1.	English	80	*The candidates are required to get acquainted with English subject, but there will be no University Examination and this subject will also not be shown in the statement of marks issued by the university. The colleges are required to conduct examination and maintain records.						

## Pattern of Examination

### 1. Anatomy:

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	2	2	2 X 10	20
Short Essays	8	6	6 X 10	60
Short Answers	10	10	10 X 2	20
<b>Total</b>				<b>80</b>
<b>Internal Assessment</b>				<b>20</b>
<b>Total Theory</b>				<b>100</b>
<b>Practicals (Spotters and specimens + Practicals IA + Viva Voce) = (65 +20+ 15)</b>				<b>100</b>
<b>Grand Total</b>				<b>200</b>

### 2. Physiology, Biochemistry, Microbiology and Pathology

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	1	1	1X 10	10
Short Essays	5	3	3 X 5	15
Short Answers	5	5	5 X 3	15
<b>Total</b>				<b>40</b>
<b>Internal Assessment</b>				<b>10</b>
<b>Grand Total Theory</b>				<b>50</b>
<b>Practicals (Practical Examination + Practical IA + Viva Voce) (20+ 10 +10+10)</b>				<b>50</b>
<b>Grand Total</b>				<b>100</b>

## SCHEME OF EXAMINATION - ENGLISH

Theory: 80 Marks

Duration: 3 hours

- |   |            |
|---|------------|
| 1) Fill in the blanks                                   | – 10 marks |
| 2) Articles ( passage/fill in the blanks)               | – 10 marks |
| 3) Tense (Sentence identification/rewriting a sentence) | – 10 marks |
| 4) Voice ( rewrite)                                     | – 10 marks |
| 5) Speech (rewrite)                                     | – 10 marks |
| 6) Linkers (paragraph)                                  | – 10 marks |
| 7) Paragraph writing                                    | – 10 marks |
| 8) Letter writing                                       | – 10 marks |

**SECTION III**  
**2<sup>nd</sup> Year B.Sc. Physician Assistant**

**MEDICINE**

**Medicine:**

**Theory: 50 Hours**

**Unit 1** Infectious Diseases- disorders, diagnosis and treatment principles - Diarrhoeal Diseases (Viral diarrhoea. Amoebic Dysentery, Shigellosis, Cholera), Typhoid, Viral Hepatitis (A, B, C, D and E), Malaria, Dengue, Meningitis – 10 hours

**Unit 2** Diseases of the Respiratory System - URTI, pulmonary tuberculosis, asthma,, COPD, pneumonia, respiratory failure and ventilation – 3 hours

**Unit 3** Cardiovascular System – Rheumatic Fever, Rheumatic Heart Disease, Hypertension, Myocardial Infarction – 4 hours

**Unit 4** Diseases of Kidney and urinary tract: Acute and chronic renal failure, urinary tract infection – 3 Hours

**Unit 5** Diseases of the GIT: Peptic ulcer, inflammatory bowel disease, cirrhosis of liver, acute and chronic pancreatitis – 4 Hours

**Unit 6** Diseases of the Immune system: - AIDS, allergies and anaphylaxis, rheumatoid arthritis – 3 Hours

**Unit 7** Endocrinology: Diabetes Mellitus, Thyroid disorders, Adrenal Disorders (Cushing's disease) – 3 Hours

**Unit 8** Nervous system – Stroke, 2 Hours

### Medicine Practicals: 25 Hours

1. Approach to the patient
2. General physical examination
3. Examination of Cardiovascular and Respiratory System
4. Case sheet writing
5. Assess the communication skills by giving a scenario
6. Ward Training

### **Recommended Books for Medicine:**

Sl.no	Name of the Textbook	Authors	Publisher
1.	Principles and Practice of Medicine	Davidson	Churchill Livingstone, London
2.	Text Book of Medicine	API	API, Mumbai
3.	Symptoms and signs in Clinical Medicine	Chambelian's	Ogilive and Christopher
	Principles of Internal Medicine	Harrison's	Mc Graw Hill
4.	Clinical Methods	Hutchison	W.B Saunders
5.	Clinical Examination ISE	Macleod's	Churchill Livingstone
6.	Clinical Medicine	Kumar and Clerk	Saunders
7.	Manual of Practical Medicine	Allagappan	Jaypee Brothers
8.	Text Book of Medicine	Vakil and Golwala	Leading Promoters and Pvt. Ltd



**SECTION III**  
**2<sup>nd</sup> Year B.Sc. Physician Assistant**

**PHARMACOLOGY**

**Pharmacology:**

**Theory: 20 Hours**

**Unit 1:** Principles of drug administration, absorption, distribution, metabolism, excretion of drugs, factors influencing drugs action, dosage and factors modifying it.

**Unit 2:** Basic drug effect, classification of drugs acting on nerves, heart, blood pressure, respiratory system, gastrointestinal system, kidneys, hormones, musculoskeletal system and analgesics.

**Unit 3:** Common drugs- effects and side effects and drug interactions.

**Unit 4:** Narcotics and scheduled drugs.

**Recommended Books for Pharmacology:**

Sl.no	Name of the Textbook	Authors	Publisher
1.	Essentials of Medical Pharmacology	K.D Tripathi	Jaypee Brothers
2.	Pharmacology and Pharmacotherapeutics	R.S Satoskar, S.D. Bhandarkar, Nirmala N. rege	Popular Prakashan
3.	Basic and Clinical Pharmacology	Bertram G. Katzung	Mc Graw Hill

## 2<sup>nd</sup> Year B.Sc. Physician Assistant

### PAEDIATRICS

THEORY: 50 Hrs.

PRACTICALS: 25 Hrs.

**Unit 1** Growth and Development (anthropometry): Measurement and interpretation of weight, length/height, head circumference and mid-arm circumference. Use of weighing machines, infant meter, interpretation of Growth Charts: Road to health card and percentile growth curves, abnormal growth patterns- failure to thrive, short stature, growth pattern of different organ systems like lymphoid, brain and sex organs, normal pattern of teeth eruption.

Important milestones in infancy and early childhood in areas of gross motor, fine motor, language and personal – social development, psychological and behavioural problems

Measurement and interpretation of sitting height, US: LS ratio and arm span Age-independent antropometric measurement – principles and application

**Unit 2** Nutrition: Normal requirements of carbohydrates, protein, fats, minerals and vitamins for newborn, children, pregnant and lactating mother.

Common food sources, Breast feeding – colostrum and composition of breast milk, initiation and technique of feeding, hazards and demerits of prelacteal feed, top milk and bottle – feeding.

Feeding of LBW babies, infant feeding /weaning foods, methods of weaning

Protein energy malnutrition: Definition, classification, features, causes and management.

Definition, causes and management of obesity

Immunization: National immunization programme,

**Unit 3** Infectious Diseases – Diarrhoea, LRTI, TB, Polio, meningitis, diphtheria, whooping cough, tetanus, measles, mumps, rubella, typhoid, viral hepatitis, cholera, chicken pox, amoebiasis, intestinal helminthiasis,

**Unit 4:** Genetics- principles of inheritance and diagnosis of genetic disorders – Down's syndrome

**Practical Training:**

- i) IV Cannulation, Cut open for fluid replacement
- ii) New Born Care
- iii) Oral Rehydration Therapy
- iv) Immunization Schedule
- v) Oxygenation – Temperature maintenance

**Recommended Books for Paediatrics:**

1. Textbook of Paediatrics – Indian Academy of Paediatrics (IAP)
2. Essential Pediatrics- OP Ghai, CBS Publishers
3. Textbook of Paediatrics –Orient Longman
4. Principles of Paediatrics and Neonatal emergencies – Jaypee Publications
5. Care of Newborn- Meharbaan Singh- Sagar Publications.
6. Hutchison's Clinical Methods- Swash Publications

## **2<sup>nd</sup> Year B.Sc. Physician Assistant**

### **BIostatISTICS – 30 Hours**

**Unit 1** Introduction to Biostatistics: Introduction, Some basic concepts, Measurement and Measurement Scales, Simple random sample, Computers and biostatistical analysis. Descriptive Statistics: Introduction, ordered array, grouped data-frequency distribution, descriptive statistics – measure of central tendency, measure of dispersion, measure of central tendency computed from grouped data, variance and standard deviation-grouped data.

**Unit 2** Basic Probability Concepts: Introduction, two views of probability – objective and subjective, elementary properties of probability, calculating the probability of an event.

Probability Distributions: Introduction, probability distribution of discrete variables, binomial distribution, Poisson distribution, continuous probability distributions, normal distribution and applications.

**Unit 3** Hypothesis Testing: Introduction, hypothesis testing – single population mean, difference between two population means, paired comparisons, hypothesis testing-single population proportion, difference between two population proportions, single population variance, ratio of two population variances.

**Unit 4** Concept of Correlation and Regression

#### **Recommended Books for Biostatistics:**

1. P.S.S Sunder Rao, J. Richard. Introduction to Biostatistics and Research methods Prentice- Hall of India Pvt Ltd, 2006.
2. Indrayan A, Basic Methods of Medical research, AITBS Publishers, New Delhi.
3. Goon AM, Gupta MK, Das GB. Fundamentals of Statistics. World Press, Calcutta.
4. Hill A.B. Principles of Medical Statistics. Edward Arnold London.

## 2<sup>nd</sup> Year B.Sc. Physician Assistant

### SURGERY

THEORY: 50 Hrs.

PRACTICALS: 25 Hrs.

Unit 1 Introduction and basic principles, metabolic response to injury, wound healing

Unit 2 Fluid, electrolyte and acid base balance, bleeding and blood transfusion.

Unit 3 Pathophysiology, Classification and Treatment of Shock and Burns

Unit 4 Thyroid gland and thyroglossal duct. Tracheostomy, Esophagus, stomach and duodenum (Hiatus Hernia, Gastritis, Peptic and Duodenal Ulcer and Pyloric Stenosis) Gall Bladder- Stones and Obstruction. Intestinal obstruction Appendicitis and Inguinal Hernia.

Unit 5: Benign Hypertrophy of Prostrate and Hydrocele

#### **Practical Training:**

1. Pre-operative preparation of patient
2. Post operative care
3. Care of wounds and drainage
4. Suture removal
5. Nasogastric aspiration
6. Care of chest drainage
7. Venepuncture, changing IV solution and tubing
8. Administering Blood Transfusion
9. Peritoneal Dialysis and Haemodialysis
10. Aspirations
11. Lumber Puncture

## **2<sup>nd</sup> Year B.Sc. Physician Assistant**

### **ANAESTHESIOLOGY**

**THEORY: 30 Hrs.**

**PRACTICALS: 20 Hrs.**

**Unit 1** Pharmacology of drugs used in Anaesthesia and intensive care

**Unit 2** Oxygen delivery systems and its applications

**Unit 3** Haemodynamic monitoring, Cardiac output determinations and its applications,

Principles of arterial blood gas analysis, Cardiopulmonary resuscitation

**Unit 4** Basic life support (BLS), Advanced cardiac life support system, (ACLS) Principles of artificial ventilation, Inotropes and vasodilators,

**Unit 5** Fluid and electrolyte balance

**Unit 6** Postoperative pain and treatment

**Unit 7** Insertion of venous cannula arterial catheter, indications, methods & complications

#### **Practical Training –**

1. OT Management / Cardiopulmonary Resuscitations
2. Ventilator Management
3. Endotracheal intubation
4. Insertion of venous cannula , arterial catheter
5. Basic Life support and Advanced Life Support
6. Intensive Care Management Protocol

### **Recommended Books for Surgery:**

- 1 Bailey and Love's Short Practice of Surger. Ruseel RCG, Wiliams NS. Arnold Heinemann Publishers.
- 2 Das K. A Manual on clinical surgery.
- 3 Hai AA. ASI Text book of Surgery. Tata Mcgraw. Publishers.

### **Anaesthesiology:**

- 1 Wylie and Churchill Davidson's – A Practice of Anaesthesia
- 2 Morgan GE, et al. Clinical Anaesthesiology. Lange
- 3 Grey, Nunn, Utting- General Anaesthesia- Butterworth

**SUBJECTS, NUMBER OF YEARS OF STUDY AND SCHEME OF EXAMINATION: TABLE: 2<sup>nd</sup> Year B.Sc. Physician Assistant**

**Subjects for examination and distribution of marks**

Sl. No	Subjects	Teaching No. of Hours		University Examination	I.A	University Practicals	I. A	Viva-voce	Total
		Theory	Practical	Theory		Practical			
1.	Medicine	50	25	40	10	30	10	10	200
2.	Paediatrics	50	25	40	10	30	10	10	
3.	Surgery	50	25	40	10	30	10	10	200
4.	Anaesthesiology	30	20	40	10	30	10	10	
5.	Pharmacology	50	25	40	10	--	--	--	100
6.	Biostatistics	30	--	40	10	--	-	--	
<b>Total</b>								<b>600</b>	
<b><u>Subsidiary Subjects *</u></b>									
1.	Law- Indian Constitution	50	*The candidates are required to get acquainted with mentioned subjects, but there will be no University Examination and these subjects will also not be shown in the statement of marks issued by the university. The UDAHS are required to conduct examination and maintain records.						
2.	Environmental Sciences	50	For Lateral entry Students the examinations will be conducted at the end of 2 <sup>nd</sup> year For Regular entry students the examinations will be conducted at the end of 1 <sup>st</sup> year						



## Pattern of Examination

### 1. Medicine and Pediatrics:

#### SCHEME OF EXAMINATION-

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	1	1	1 X 10	10
Short Essays	4	3	3 X 5	15
Short Answers	5	5	5 X 3	15
<b>Total</b>				<b>40</b>
<b>Internal Assessment</b>				<b>10</b>
<b>Total Theory</b>				<b>50</b>
<b>Practicals (Practical Examination+ Practicals IA + Viva Voce) = ( 30 +10+ 10)</b>				<b>50</b>
<b>Grand Total</b>				<b>100</b>

### 2. Pharmacology and Biostatistics:

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	1	1	1X 10	10
Short Essays	5	3	3 X 5	15
Short Answers	5	5	5 X 3	15
<b>Total</b>				<b>40</b>
<b>Internal Assessment</b>				<b>10</b>
<b>Grand Total Theory</b>				<b>50</b>

## 2. Surgery and Anesthesiology:

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	1	1	1X 10	10
Short Essays	5	3	3 X 5	15
Short Answers	5	5	5 X 3	15
<b>Total</b>				<b>40</b>
<b>Internal Assessment</b>				<b>10</b>
<b>Grand Total Theory</b>				<b>50</b>
<b>Practicals (Practical examination + Practical IA + Viva Voce)</b> <b>(20+ 10 +10+10)</b>				<b>50</b>
<b>Grand Total</b>				<b>100</b>

**SECTION - V**  
**1<sup>st</sup> Year B.Sc. Physician Assistant**

**L A W - I N D I A N C O N S T I T U T I O N**

**I. GOAL :**

The students should gain the knowledge and insight into the Indian Constitution so that they are aware of the fundamental rights and freedom bestowed through the democratic governance of our country.

**II. OBJECTIVES :**

**A) KNOWLEDGE :**

At the end of the B.Sc. 1<sup>st</sup> Year course the student is expected to know:

- 1) Basic knowledge of the Indian Constitution.
- 2) Democratic institutions created by the Constitution.
- 3) Special rights created by the Constitution for regional and linguistic minorities.
- 4) Election Commission.
- 5) Legislative, Executive and Judicial powers and their functions in India.

**B) SKILLS:**

At the end of the B.Sc. 1<sup>st</sup> Year course the student is expected to make use of knowledge:

- 1) To perform his / her duties towards the society judiciously and with conscious effort for self-development.
- 2) To utilize State policies in their future practice.

## **COURSE CONTENTS**

	<b>Theory:</b>	<b>25 Hours</b>
Unit I	a) Meaning of term Constitution. b) Making of the Indian Constitution - 1946 - 1949 and role played by Dr. B. R. Ambedkar. c) Salient Features of the Constitution. d) Preamble of the Constitution.	2 Hours
Unit II	The democratic institutions created by the Constitution. Bicameral System of Legislature at the Centre and in the States. Devolution of Powers to Panchayat Raj Institutions.	5 Hours
Unit III	Fundamental Rights and Duties - Their content and significance	5 Hours
Unit IV	Directive Principles of State policies - The need to balance Fundamental Rights with Directive Principles.	1 Hour
Unit V	Special rights created in the constitution for Dalits, Backward class, Women and Children, and the Religious and Linguistic Minorities	1 Hour
Unit VI	Doctrine of Separation of Powers - Legislative, Executive and Judicial, and their functions in India.	4 Hours
Unit VII	The Election Commission and State Public Service Commissions.	2 Hours
Unit VIII	Method of amending the Constitution.	1 Hour
Unit IX	Enforcing rights through Writs Certiorari, Mandamus, Quo warranto and Habeas Corpus.	2 Hours
Unit X	Constitution and Sustainable Development in India.	2 Hours

## **Scheme of Examination**

Institutional Theory Examination at the end of the B.Sc. 1<sup>st</sup> Year Course :100 Marks

### **Reference Books Latest Edition :**

<b>Sl. No.</b>	<b>Title</b>	<b>Author</b>	<b>Publisher</b>
1	The Constution of – A Politico – Legal Study	J. C. Johari	Sterling Publication Pvt. Ltd.
2	Constitution Law	J. N. Pandey	Central Law Agency
3	The Indian Constitution	Granville Austin	Corner Stone of Nation
4	Environmental Biology	P.D. Sharma	Rastogi Publication
5	Environment Problem	Asthana & Asthana	S. Chand & Company
6	Environmental Protection	C.S. Mehta	Ashish Publishing
7	Environmental Pollution	Tunny Katyal, M. Satake	Anmol Publication

## SECTION - VI

### B . S C . ( P H Y S I C I A N A S S I S T A N T )

#### ENVIRONMENTAL STUDIES

##### GOAL:

The students should gain knowledge to understand the multidisciplinary nature of the environment and the awareness of the eco system, which maintains the natural environment.

##### OBJECTIVES:

###### a) KNOWLEDGE

At the end of the B.Sc. 2<sup>nd</sup> year Course the student is expected to know:

1. The natural resources like forest, water, mineral, food, energy and land.
2. Functions of the eco system.
3. Bio-diversity and its conservation.
4. Environmental pollution & its prevention.
5. Social issues.

###### b) SKILLS

At the end of the 1<sup>st</sup> B.Sc. Course the student is expected to:

1. Visit local areas to understand and document environmental assets like river, forest, grassland, hill and mountain.
2. Visit an industrial area or agricultural area to know about local pollutants.
3. Identify common plants, insects and birds in their local areas.
4. Identify rivers, hills and mountains in their local areas.
5. To make use of the knowledge to protect natural resources.

- 1. Multi-disciplinary nature of environmental studies** **2 hours**
- Definition, scope and importance, need for public awareness.
- 2. Natural Resources:** **8 hours**
- Renewable and non-renewable resources:**
- Natural resources and associated problems.
- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
  - Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
  - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
  - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
  - Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
  - Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
    - Role of an individual in conservation of natural resources.
      - Equitable use of resources for sustainable lifestyles
- 3. Ecosystems** **6 hours**
- Concept of an ecosystem.
  - Structure and function of an ecosystem.
  - Producers, consumers and decomposers.
  - Energy flow in the ecosystem.
  - Ecological succession.
  - Food chains, food webs and ecological pyramids.
  - Introduction, types, characteristic features, structure and function of the following ecosystems:-
    - Forest ecosystem
    - Grassland ecosystem
    - Desert ecosystem
    - Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
- 4. Biodiversity and its conservation** **8 hours**
- Introduction – Definition : genetic, species and ecosystem diversity.
  - Biogeographical classification of India.

- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

## **5. Environmental Pollution**

**8 hours**

Definition

- Cause, effects and control measures of :-
  - a. Air pollution
  - b. Water pollution
  - c. Soil pollution
  - d. Marine pollution
  - e. Noise pollution
  
  - f. Thermal pollution
  - g. Nuclear hazards
- Solid waste Management : Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management : floods, earthquake, cyclone and landslides.

## **6. Social Issues and the Environment**

**7 hours**

- From Unsustainable to Sustainable development
  - Urban problems related to energy
  - Water conservation, rain water harvesting, watershed management
  - Resettlement and rehabilitation of people; its problems and concerns.
- Case Studies



- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and control of Pollution) Act.
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.

**7. Human Population and the Environment**

**6 hours**

- Population growth, variation among nations.
- Population explosion – Family Welfare Programme.
- Environment and human health.
- Human Rights.
- Value Education.
- HIV/AIDS
- Women and Child Welfare.
- Role of Information Technology in Environment and human health.
- Case Studies.

**SCHEME OF EXAMINATION**

**A Theory : 80 Marks**

- Long Essay**                      **1 X 10 = 10**
- Short Essay**                        **3X 5 = 15**
- Short Answers**                    **5X3 = 15**

**Recommended Books Latest Edition :**

<b>Sl No.</b>	<b>Title</b>	<b>Author</b>	<b>Publisher</b>
1	Environmental Biology	Agarwal, K.C.	Nidi Publ. Ltd. Bikaner
2	The Biodiversity of India	Bharucha Erach	Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013
3	Environmental Encyclopedia	Cunningham W.P., Copper T.H., Gorhani E. & Hepworth M.T.	Jaico Publ. Hose, Mumbai
4	Global Biodiversity Assessment	Heywood, V.H. & Waston R.T.	Cambridge University Press
5	Environmental Protection and Laws	Jadhav H. & Bhosale V.M.	Himalaya Publ. House Delhi
6	Environmental Science Systems & Solutions	Mckinney M.L. & School R.M.	Himalaya Publ. House Delhi

## SECTION IV

**3<sup>rd</sup> Year B.Sc. Physician Assistant**

**Paper I - Cardiology and Cardiac Surgery**

**THEORY: 30 Hrs.**

**PRACTICALS: 30**

**Hrs**

### **CARDIOLOGY**

**Unit 1** Basic anatomy and physiology of cardiovascular system

**Unit 2** Cardiovascular diseases – cardiac arrhythmias, Hypertension symptoms, Rheumatic heart disease, heart failure, Ischemic Heart Disease, pulmonary thromboembolism, Congenital Heart Diseases.

**Unit 3** Diagnostic tools – ECG, Chest X-ray, ECHO, TMT, Holter, 24 hour ambulatory BP monitoring, blood analysis., etc. Cardiac catheterization and coronary angiography-preparation of patient physically and mentally. Pre and post-operative care and rehabilitation programme. PPI Importance of life style modification measures.

Unit 4: Clinical Examination of Cardiovascular System

## **CARDIAC SURGERY**

**THEORY: 30 Hrs.**

**PRACTICALS: 30**

**Hrs**

**Unit 5** Cardiac surgery - Basics – Cardiopulmonary bypass – closed and open heart operation, PDA ligation, closed mitral valvotomy, pulmonary artery banding , blalock trussing shunt, pericardiectomy, shunt operations, ASD and VSD closure, Tetralogy of Fallot correction, valvular disease surgeries, surgery for transpositions, other corrective surgeries and coronary surgeries.

**Unit 6:** Requirements for catheterization, various types of catheters, equipment for angiography, other materials required for catheterization, preparation of patient for catheterization, the technique of opening artery for catheterization, coronary angiography, renal angiography coronary angioplasty, PTCA procedure, complication during catheterization and their management.

### **Practical Training –**

Common investigations:

1. ECG,
2. Chest X ray,
3. Echocardiogram : TTE and TOE
4. Stress test and Dobutamine Stress Echocardiography
5. Pulmonary function tests.
6. Clinical evaluation of cardiac patients, diagnosis of cardiac diseases
7. Recording patients data
8. Assisting in procedures
9. **TMT:** Clinical impression and interpretation
10. **OT Training**
  - a. Knowledge about aseptic techniques in OT – Gowning, Gloving, OT sterilization, Sterilization of equipments and surgical

instrument and Infection control methods for the health personnel's  
in OT

- b. Assisting in receiving the pre-operative patients
- c. Arranging the surgical trolley for operation
- d. Draping the patient
- e. Packing instruments
- f. Assisting in surgical operation - Adult (CABG), Valve replacements Pediatric cases , Closed heart procedures
- g. Floor management
- h. Handing over the patient in ICU (ICUI) & shifting the patient to ICU

#### **11. INTENSIVE CARE UNIT**

- i. Assisting in receiving patients
- ii. Knowledge about all equipments - Ventilators, Monitors, Suction apparatus and water seal drainage, IABP, Defibrillation, Ventricular assist devices
- iii. Knowledge about emergency drugs
- iv. Knowledge about emergency management
- v. Assisting in procedures - Suctioning, Ryle's tube feeding, IV infusions, Pleural effusion, Peritoneal dialysis, Haemodialysis, Extubating patients, Removal of chest tubes
- vi. Assisting in CPR
- vii. Monitoring patients with swan-ganz catheter
- viii. Assisting in discharge of patients from ICU

**REFERENCE BOOKS:**

<b>Name of Authors</b>	<b>Title of the Book</b>	<b>Latest Edition</b>	<b>Name of the Publisher</b>
Lionel H. Opie, Bernard J. Gersh	Drugs for heart	6 <sup>th</sup> Edition	Elsevier Saunders
Joseph K. Perloff MD , Ariane Marelli	Perloff's Clinical Recognition of Congenital Heart Disease	6 <sup>th</sup> Edition	Saunders
Braunwald	Text book of Cardiovascular Medicine – Heart Disease	9 <sup>th</sup> Edition	Saunders
Kirclin / Barrat- Boyes	Text book of Cardiac Surgery	4 <sup>th</sup> edition	Saunders

## **PAPER II : Neurology And Neurology**

### **NEUROLOGY**

**THEORY: 30 Hrs.**

**PRACTICALS: 30**

**Hrs**

**Unit 1** Basic anatomy and Physiology of Nervous system

**Unit 2** Neuropathology – Epilepsies, Disturbances of Consciousness, Cerebrovascular disease, Parkinson’s Disease, meningitis, encephalitis, Brain death, Peripheral Neuropathies.

**Unit 3** Clinical examination of nervous system and Basic investigations

Practicals: Clinical Examination of Nervous System

#### **Reference Books:**

1. Gelb DJ. Introduction to Clinical Neurology, 2 nd ed, Butterworth Heineman 1999.
2. Simon RP, Aminoff MJ, Greenberg DA. Clinical Neurology, 4 th ed. Lange. 1999. “An approach to neurology based on the presenting symptoms or signs, developed while teaching in the clinics and wards of the University of California, San Francisco.”
3. Weiner WJ, Goetz CG. Neurology for the Non-neurologist, 4 th ed. Lippincott, Williams & Wilkins. 1999.
4. Preston DC., Shapiro BE. Electromyography and Neuromuscular Disorders. Elsevier
5. Kimura, J. Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice.

## **GASTROENTEROLOGY**

**THEORY: 30 Hrs.**

**PRACTICALS: 30**

**Hrs**

### **Unit 1**

Basic anatomy of Alimentary tract: Esophagus, Stomach, Small Intestine, Large Intestine, Liver, Biliary Tree, Gall Bladder, Pancreas

Basic physiology of gastrointestinal tract: Basic functions of GI Tract, Basic accessory glands associated with GI tract with their functions.

Unit 2:

Symptomatology of GI System: Dysphagia, Abdominal Pain, Diarrhoea, Dyspepsia, Constipation, Vomiting, Jaundice, GI Bleeding, Foreign body in GI tract

Disorders of GI system – GERD, Carcinoma Oesophagus, Oesophageal strictures, Peptic ulcers, Helicobacter Pylori infection, Carcinoma Stomach, Portal Hypertension, Ascites, Gall Stones, Common bile duct stones, Jaundice, Carcinoma colon, Inflammatory Bowel Disease, Irritable Bowel Syndrome, Pancreatitis

Unit 3:

Clinical examination of gastrointestinal system – Examination, Palpation, Percussion and Auscultation

Unit 4:

Video Endoscopy System: Gastroscope, Colonoscope, Dudenoscope, Processor, Monitor, Endoscopic trolley accessories

Endoscopic Procedures: Upper GI Endoscopy, Lower GI Endoscopy, Dudenoscopy, Endoscope Biopsies, Endoscopic dilatation, Endoscopic variceal ligation, Sclerotherapy,



Hemoclips/Hemospray, Endoscopic retrograde Cholangio-pancreatography, Stone extraction, Stenting (Common bile duct and pancreatic duct) and others

**Reference Books for Gastroenterology:**

1. John DiBaise. Gastroenterology and Hepatology Board Review: Pearls of Wisdom, Third Edition
2. Isidor Segal, C Pitchumoni, Joseph Sung. Gastroenterology and Hepatology Manual. A Clinician's Guide to a Global Phenomenon

### **Paper III: Nephrology and Pulmonology**

#### **Nephrology**

**THEORY: 30 Hrs.**

**PRACTICALS: 30 Hrs**

**Unit 1** Introduction to Renal System – Basic Anatomy and Physiology of renal system, Renal Function Tests

**Unit 2** Renal pathology

- ❖ Glomerulonephritis
- ❖ Acute and chronic renal failure
- ❖ Pyelonephritis
- ❖ Kidney changes in hypertension

**UNIT 3:** Urinary bladder Pathology

- ❖ Cystitis
- ❖ Urolithiasis and obstructive uropathy

**Unit 4:** Clinical examination of kidney and genitourinary system -symptoms, signs and investigations.

#### **Reference Books for Nephrology:**

1. John Pooler, Douglas Eaton. Vanders Renal Physiology.Mc Graw-Hill.
2. Michael J. Field , Carol Pollock , David Harris . The Renal System.Elsevier Health Sciences

## **PULMONOLOGY**

**THEORY: 30 Hrs.**

**PRACTICALS: 30 Hrs**

**Unit 1:** Basic Anatomy and Physiology of respiratory system

**Unit 2:** Upper airway diseases – Tonsillitis, Pharyngitis, Laryngitis, Sinusitis and common cold.

**Unit 3:** Lower airway diseases- Bronchial asthma, chronic obstructive lung diseases, Bronchiectasis, Pulmonary tuberculosis, pneumonia and Lung Cancer

**Unit 4:** Pleural diseases – Pleural effusion, Pneumothorax, Empyema, Hemothorax

**Unit 5:** Pulmonary Function Tests

Practicals:

- i. Clinical Examination of Respiratory System

### **Reference Books for Pulmonology:**

1. Harrison's Principles of Internal Medicine
2. Davidson's Book of Medicine
3. Macleod's Text Book of clinical examination
4. Hutchison's Clinical Examination

**SUBJECTS, NUMBER OF YEARS OF STUDY AND SCHEME OF EXAMINATION:**

**TABLE: 3<sup>rd</sup> Year B.Sc. Physician Assistant**

**Subjects for examination and distribution of marks**

Sl. No	Subjects	Teaching No. of Hours in each subject		University Examination	I.A	University Practicals	I. A	Viva-voce	Total
		Theory	Practical	Theory		Practical			
1.	Cardiology	50	50	40	10	25	10	15	200
	and Cardiac Surgery			40	10	25	10	15	
2.	Neurology	50	30	40	10	25	10	15	200
	And Gastroenterology			40	10	25	10	15	
3.	Nephrology	50	30	40	10	25	10	15	200
	And Pulmonology			40	10	25	10	15	
<b>Total</b>								<b>600</b>	

## Pattern of Examination

### 1 Cardiology and Cardiac Surgery:

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	2	2	2 X 10	20
Short Essays	8	6	6 X 10	60
Short Answers	10	10	10 X 2	20
<b>Total</b>				<b>80</b>
<b>Internal Assessment</b>				<b>20</b>
<b>Total Theory</b>				<b>100</b>
<b>Practicals (Practical Examination+ Practicals IA + Viva Voce) = (50 +20+ 30)</b>				<b>100</b>
<b>Grand Total</b>				<b>200</b>

### 2 Neurology and Gastroenterology:

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	2	2	2 X 10	20
Short Essays	8	6	6 X 10	60
Short Answers	10	10	10 X 2	20
<b>Total</b>				<b>80</b>
<b>Internal Assessment</b>				<b>20</b>
<b>Total Theory</b>				<b>100</b>
<b>Practicals (Practical Examination+ Practicals IA + Viva Voce) = (50 +20+ 30)</b>				<b>100</b>
<b>Grand Total</b>				<b>200</b>

### 3. Nephrology and Pulmonology:

Type of Question	No. of Questions	Questions to be answered	Question X marks	Total Marks
Long Essays	2	2	2 X 10	20
Short Essays	8	6	6 X 10	60
Short Answers	10	10	10 X 2	20
<b>Total</b>				<b>80</b>
<b>Internal Assessment</b>				<b>20</b>
<b>Total Theory</b>				<b>100</b>
<b>Practicals (Practical Examination+ Practicals IA + Viva Voce) = (50 +20+ 30)</b>				<b>100</b>
<b>Grand Total</b>				<b>200</b>