

**STUDENT GUIDE BOOK**  
**SYSTEM BASED PATHOLOGY**  
**4<sup>TH</sup> YEAR MBBS 2022**

Prepared by  
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Class In charge 4<sup>th</sup> yr. MBBS

## INTRODUCTION

Special Pathology is a subject that describes the cause, progression, and organ involvement, anatomic and functional change in the organ, clinical presentation and complications of the disease. It forms the basis of subject of Medicine. This subject is taught by using system based approach and all important and common diseases are covered in the syllabus.

### **COURSE REQUIREMENTS**

The learner should have sound knowledge of

1. Basic Anatomy of different systems
2. Basic Physiology of different systems
3. Basic principles of General Pathology
4. Basic Microbiology and Immunology

### **TARGET LEARNER**

4<sup>th</sup> year MBBS student

### **OVERVIEW OF THE SESSION**

The aims of Pathology teaching in 4<sup>th</sup> yr. MBBS are as follows:

1. To equip the student with the knowledge of common disease patterns and why do they occur as given in the university syllabus.
2. How to reach at a specific diagnosis of a disease
3. What requisite investigations are to be performed and what are the protocols of routine investigations

They are achieved through an academic session of 9mths (36 weeks), as specified by university of Health sciences and by application of both cognitive knowledge and psychomotor skills.

**Cognitive Knowledge** is imparted by

- i- **Lectures** – delivered by senior faculty members four times week with an allotted time of 45min each, using all types of audio-visual aids and covering all aspects of the university syllabus.
- ii- **Clinical Seminar (CPC)** – organized on a current topic of pathological importance, once in four months, with an allotted time of 60-90 min followed by open house discussion.
- iii- **Group Discussions** – on a previously notified subject, and consisting of 30 students each with an allotted time of 90 min, twice a week.

**Psychomotor Skills** teaching is done during practical demonstrations, held in two 90min sessions per week. The students are rotated in four sections of the pathology department, i.e. histopathology, hematology, chemical pathology and museum in batches of 35 – 40.

## COURSE OBJECTIVES

### Lectures

The student should be able to

1. Classify common diseases related to different systems of the human body
2. Enumerate the etiological factors causing different diseases
3. Relate the etiological factors with the causation of the disease.
4. Enlist key points of reaching at a specific diagnosis of a disease
5. Enumerate requisite investigations which are to be performed to reach at a specific diagnosis

### Practicals

The student should be able to

1. Enlist and Identify basic instruments used in Pathology laboratory.
2. Enumerate basic tests used in the diagnosis of different diseases.
3. Describe the protocols of routine investigations
4. Identify gross pathological changes in the tissues by looking at a specimen
5. Identify under the microscope diagnostic histological features of a disease
6. Draw and label the microscopic histology of a specific disease

## FACULTY INTRODUCTION

1. Prof. Shazia Ibnerasa
2. Prof. Dr. Fauzia Sadiq
3. Prof. Dr. Shahbaz Amin
4. Dr. Nazia Ahmad
5. Dr Muhammad Rizwan
6. Dr. Mamoona Aslam
7. Dr. Farzad Effan
8. Dr. Fajar Shabbir
9. Dr. Ayesha Gondal
10. Dr. Khadija Bashir

## TEACHING SESSION

<b>Length of session</b>	9 months (36weeks) e.g March 2022 – November 2022
<b>Send-up</b>	Expected date in Nov.
<b>Professional exam</b>	December 2022 – January 2023
Total lectures (144)	112 @4/week (minus 8wks) (Systemic Pathology 92 + Hematology 20)
Total Practicals (72)	58 @2/week (minus 14)

### TEACHING METHODOLOGIES

Lectures	(approx. 10/system)
Practical's/OSPE	(approx. 4/system)
Tests/ Study Assignments	= # 7 (+ test & discussion)

### LECTURES

#### Face to Face sessions

5 Lectures of 45 Min Each /Week

#### Online Sessions

4-5 Lectures of 1 hour each/week

MICROSOFT TEAMS will be used for online classes. IT department will facilitate installation of software and activation of student online ID creation

### PRACTICALS

#### Face to Face sessions

Class will be coming for Practicals twice a week.

Practicals will be in-line with lecture teaching.

Class is divided in 5 groups. (A-B-C-D-E)

Each group will have about 30-32 students.

Each group will be assigned a tutor.

One day there will be OSPE teaching. Second day will be for SEQ practice. They will be further divided for Practical/OSPE.

#### Online Sessions

Total class is divided into 5 groups and will be assigned to a tutor for 4-8 weeks

- I – Dr. Farzad Effan
- II – Dr. Fajar Shabbir
- III – Dr. Ayesha Gondal
- IV – Dr. Khadija Aftab
- V – Dr. Saira Gull

GOOGLE CLASSROOM will be used for practical classes. The assigned tutors will have their own google class room for independent teaching/OSPE practice

## **TUTORIALS**

Tutorial time will be utilized for

- 1- Class Assessments
- 2- Reflective learning

## **TEACHING SCHEDULE & VENUE**

(For Face to face teaching)

Class timetable will be notified well before time

## **THEORY**

Starting date of the session expected date	March 2022
Venue	Will be notified
Duration of Course	9 Months (36 weeks)
No. of total lectures	More than 100 @ 4/week
Days of Pathology lectures	Monday, Tues, Wed, Thurs, Friday

## **PRACTICALS**

Starting date of the session	March 2022
Venue	Histopathology Laboratory Hematology laboratory
Days of Pathology Practicals	Monday to Thursday
Pathology Tutorial / test day	Friday

## **TEACHING SCHEDULE ONLINE TEACHING**

On-Line teaching timetable will be notified on Student portal and on Google class room

### **THEORY**

Days of Pathology lectures	Monday, Tues, Wed, Thurs, Friday
Time of lecture	9 – 10 am (subject to change)
Portal Used	<b>MICROSOFT TEAMS</b>

### **PRACTICALS**

Days of Pathology Practicals	Friday and Saturday
Time of practical	9 – 11 (can change)
Portal used	<b>GOOGLE CLASS ROOM</b>

## TEACHING PROGRAMME (proposed)

LECTURE ALLOCATION 2022

Session start date 7-3-22 (expected)

	March	April	May	June	July	August	Sep	Oct	Nov	
CVS	8				S					8
Respiration	2	8			U					10
GIT		8	2		M				W	10
Liver			5		M				R	5
Kidney					E	7	1		A	8
Male					R	4			P	4
Female							8			8
Breast					B		6		U	6
Endocrines					R			8	P	8
Bones					E			8		8
CNS			4		A					4
Skin				4	K*					4
Hematology			5	4		5				13
<b>TOTAL</b>	<b>10</b>	<b>16</b>	<b>16</b>	<b>8</b>		<b>16</b>	<b>15</b>	<b>16</b>		

\*Expected dates, subject to approval by the Admin

## TIMELINE PATHOLOGY TOPICS 2022

1	March	CVS Respiration	Prof. Shazia Ibnerasa
2	April	GIT	Prof. Shahbaz
3	May	Liver CNS	Prof. Shahbaz
4	June	Hematology	Dr. Nazia
5	July	Lymphomas	Dr. Mamoona
6	August	Male system Bones & Joints	Dr. Rizwan Prof. Shazia Ibnerasa
7	September	Female system Breast	Prof. Shazia Ibnerasa Dr. Rizwan
8	October	Endocrines Skin	Prof. Fauzia, Prof. Shahbaz
9	November	Wrap up & SEND UP	

\*Midterm: End June or beginning July

## **DETAILS OF TEACHING (SYLLABUS UHS)**

### **LEARNING OBJECTIVES:**

#### **1. DISEASES OF BLOOD VESSELS & HEART**

1. Differentiate among atherosclerosis, Monckeberg's sclerosis and arteriosclerosis.
2. Describe atherosclerosis with respect to the following factors  
Etiology and pathogenesis, early lesion, Late and complicated lesion, Vessels affected and Complications
3. Classify hypertension. List the causes of secondary hypertension. Describe the vascular changes in hypertension.
4. Discuss the common pathogenic mechanisms of vasculitis.
5. Classify aneurysm according to the etiology.  
Describe atherosclerotic aneurysm with respect to Pathogenesis, Type of vessel involved, Morphological & clinical features.
6. Describe varicose veins with respect to Common sites, predisposing factors, Clinical features.
7. List the benign and malignant tumors of blood vessels.
8. Describe the pathogenesis of ischemic heart disease.
9. Describe myocardial infarction with respect to the following  
Sequence of changes in myocardial infarction (MI)  
Pattern of elevation of biochemical markers used in the evaluation of M.I  
Complications
10. List the causes of sudden cardiac death
11. Describe cor-pulmonale and list the predisposing disorders
12. Describe rheumatic fever with respect to Etiology, Pathogenesis, Morphological & clinical features
13. List the causes of myocarditis.
14. Describe morphological and clinical features of myocarditis
15. Describe the three major clinico-pathological groups of cardiomyopathy (dilated, hypertrophic and restrictive)
16. List the causes of pericarditis. Describe the clinical and morphological feature of pericarditis
17. List the primary & secondary cardiac tumors
18. Describe the main features of Fallot's tetralogy and coarctation of aorta

#### **2. HAEMATOPOIETIC AND LYMPHOID SYSTEMS**

1. Outline the stages in the formation of red blood cell and white blood cells.
2. List the normal values of red cell count, hemoglobin level, packed cell volume, MCH, MCV, MCHC, WBC count and platelet count.
3. Classify anemia on the basis of mechanism of RBC production.
4. Describe the causes of iron deficiency.
5. Describe the morphological and clinical features of iron deficiency anemia.
6. List the types of megaloblastic anemia.



7. List the conditions which predispose to folate deficiency.
8. Describe vit. B12 deficiency with respect to the conditions which produce it, Blood picture and clinical features
9. Differentiate between anemia of chronic disease and nutritional deficiency anemia.
10. Describe hereditary spherocytosis with respect to incidence, Etiology, Pathogenesis, Morphological and clinical features
11. Discuss the pathogenesis of thalassemia.
12. Classify thalassemia on the basis of clinical and genetic features.
13. Differentiate between the blood picture and clinical feature of Beta-thalassemia minor and major.
14. Discuss the mechanism of hemolytic anemia due to glucose-6-phosphate dehydrogenase deficiency.
15. Classify immunohemolytic anemia.
16. Differentiate between warm and cold antibodies immunohemolytic anemia.
17. Describe aplastic anemia with respect to the Etiology and pathogenesis
18. Clinical features and Lab. Diagnosis
19. Describe the mechanisms which can cause neutropenia/ agranulocytosis.
20. Describe the causes of leukocytosis.
21. Describe the epidemiological, morphological and clinical features of infectious mononucleosis.
22. Differentiate between acute and chronic non-specific lymphadenitis.
23. Describe the different classifications (REAL and working formulations) of non-Hodgkin's lymphoma.
24. Describe Hodgkin's disease with respect to classification, clinical stages, etiology and pathogenesis
25. Classify leukemia
26. Discuss the prognostic factors of acute lymphoblastic and acute myeloblastic leukemia.
27. Describe the pathophysiology of chronic myeloid and chronic lymphocytic leukemia
28. Describe multiple myeloma with respect to Etiology, Pathogenesis, Morphology, Clinical features
29. Describe disseminated intravascular coagulation with respect to Etiology and pathogenesis Clinical features and laboratory diagnosis
30. List the causes of decreased production and decreased survival of platelets.
31. Describe the pathogenesis of idiopathic & thrombotic thrombocytopenic purpura
32. Indicate the value of following tests in the assessment of bleeding disorders
33. Bleeding time , Clothing time, Platelets count, Platelet function test, Partial thromboplastin time , Prothrombin time, Mixing test studies
34. Describe polycythemia with respect to Etiology Pathogenesis Clinical significance Lab. Diagnosis
35. Describe the ABO and Rhesus blood groups and outline the way in which a sample of blood is typed.
36. List the hazards of blood transfusion and how these can be prevented.

### **3. DISEASES OF RESPIRATORY SYSTEM**

1. List micro-organisms causing upper respiratory tract infection.
2. Describe the etiology and clinical features of rhinitis and nasal polyps.
3. List malignant & benign tumors of nasopharynx and larynx.

4. Discuss pleural effusion, hemothorax, hydrothorax, pleureitis, pneumothorax and chylothorax.
5. Discuss acute pharyngitis, acute bacterial epiglottitis and acute laryngitis.
6. Classification of atelectasis on the basis of underlying mechanism.
7. Differentiate between restrictive & obstructive lung disease on the basis of pulmonary function tests.
8. Describe the etiology pathogenesis, morphology & clinical features of asthma.
9. Describe various types of emphysema, its pathogenesis, morphology and clinical features.
10. Describe pathogenesis and clinical features of chronic bronchitis.
11. Describe the predisposing factors, pathogenesis, morphology & clinical features of bronchiectasis.
12. List the clinical conditions associated with restrictive lung diseases.
13. Describe the pathogenesis, morphology & clinical features of adult respiratory distress syndrome.
14. Describe the pathogenesis, morphology & clinical features of sarcoidosis and hypersensitivity pneumonitis.
15. Describe the pathogenesis, morphology and clinical features of idiopathic pulmonary fibrosis.
16. Describe clinical features of Good pasture's syndrome.
17. List the pathogenesis, morphology & clinical features of thromboembolism.
18. Describe the morphology & clinical features of pulmonary infarction.
19. List the causes of pulmonary hypertension and vascular sclerosis.
20. Describe the etiology, pathogenesis, morphology & clinical features of acute bacterial pneumonia.
21. List the micro-organisms causing atypical pneumonia.
22. Discuss the etiology, pathogenesis & clinical features of tuberculosis of the lung.
23. List the Fungi (candida, pneumocystis carinii) causing lung infections.
24. Describe the classification, etiology, pathogenesis and clinical features of bronchogenic carcinoma.
25. Describe etiology & pathogenesis of mesothelioma.
26. Describe pneumoconiosis with respect to etiology, pathogenesis and clinical features.

## **4. DISEASES OF ORAL CAVITY AND GASTROINTESTINAL TRACT**

### **4.1 Oral cavity**

1. Define the term leukoplakia.
2. List the possible predisposing factors (pipe smoking, ill-fitting denture, alcohol abuse, irritant foods) of leukoplakia.
3. Discuss the risk factors of oral cancer.
4. Describe the clinical and morphological feature of oral cancer.
5. List the benign and malignant tumors of salivary glands.
6. Describe the clinical and morphological features of pleomorphic adenoma.

### **4.2 Esophagus**

1. Describe the predisposing factors of esophagitis.
2. Carcinoma of the esophagus.

### **4.3 Stomach**

1. List the predisposing factors associated with acute gastritis.
2. Describe the pathogenesis and clinical features of acute gastritis.
3. Describe the pathogenesis, morphological and clinical features of chronic gastritis.
4. Describe the pathogenesis, morphological and clinical features of peptic ulcer.

5. Describe the gastric carcinoma with respect to Risk factors Pathogenesis Clinical and morphological features Prognosis

#### **4.4 Intestine**

1. Describe the clinical and morphological features of Hirschsprung's disease.
2. Describe the pathogenesis, morphological and clinical features of Celiac sprue  
Tropical sprue
3. Describe the predisposing conditions for ischemic bowel disease.
4. Describe the clinical and morphological features of ischemic bowel disease.
5. Differentiate between Crohn's disease and ulcerative colitis.
6. List the major causes of intestinal obstruction.
7. Describe the clinico-pathological features of following diseases of intestine  
Amebiasis Tuberculosis Typhoid
8. List the non-neoplastic polyps of intestine.
9. Classify adenomas on the basis of epithelial architecture.
10. Describe the clinical and morphological features of adenomas.
11. Discuss the pathogenesis of colorectal carcinoma.
12. Describe the morphological and clinical features of colorectal carcinoma.
13. Describe the Aster-Collar classifications of carcinoma of the colon and rectum.
14. Describe carcinoid tumor with respect to the Peak incidence most prevalent sites in the gut Morphological features.
15. Describe the clinical features of carcinoid syndrome.
16. Describe the etiology, pathogenesis, morphological and clinical features of acute appendicitis. List the tumors of appendix.

### **5. DISEASES OF LIVER & BILIARY TRACT**

#### **5.1 Liver**

1. Describe the pathway of bilirubin metabolism and its elimination from the body.
2. Describe the types of jaundice with respect to the following: Causes Clinical features Lab diagnosis
3. Differentiate between intrahepatic and extrahepatic biliary obstruction.
4. List the causes of hepatic failure.
5. Describe the morphological and clinical features of hepatic failure.
6. Describe the important complication of liver failure (hepatic encephalopathy, hepatorenal syndrome).
7. List the common causes of cirrhosis (viral hepatitis, cryptogenic, alcohol, biliary disease, genetic hemochromatosis, Wilson's disease, alpha-1 anti-trypsin deficiency).
8. Discuss the pathogenesis of cirrhosis.
9. Describe the complications of cirrhosis (progressive liver failure, portal hypertension, hepatocellular carcinoma).
10. Differentiate among viral hepatitis A, B, C, D and E with respect to Route of transmission Incubation period Clinical features. Potential outcome of acute infection.
11. Define carrier state and differentiate between acute and chronic hepatitis.
12. List the common causes of liver abscess (amebic, echinococcal, bacterial, and fungal).
13. Describe clinical and morphological features of liver abscess.
14. List the drugs and toxins which cause hepatic injury along with their specific effects.
15. Discuss the pathogenesis of alcohol liver disease.

16. Describe the morphological and clinical features of alcoholic hepatitis and cirrhosis.
17. List the causes of secondary hemochromatosis.
18. Describe the pathogenesis, morphological and clinical features of hemochromatosis.
19. Discuss the clinico-morphological features of Wilson's disease.
20. Describe the clinico-morphological features of alpha-1 anti-trypsin deficiency.
21. List the causes of neonatal hepatitis.
22. Differentiate between primary and secondary biliary cirrhosis.
23. Discuss the epidemiology, pathogenesis, morphological and clinical features of hepatocellular carcinoma.

#### **Biliary tract**

24. Describe the pathogenesis and risk factors of cholelithiasis.
25. Describe the morphological and clinical features of acute and chronic cholecystitis.
26. Describe clinical and morphological features of gall bladder cancer.

#### **Pancreas**

27. Describe acute pancreatitis with respect to
28. Etiology and pathogenesis
29. Clinical and morphological features.
30. Describe the clinical and morphological features of chronic pancreatitis.
31. Describe the clinical and morphological features of carcinoma of pancreas.

## **6. THE URINARY SYSTEM**

1. Define the terms: Azotemia Uremia Acute renal failure Chronic renal failure
2. Discuss the types, genesis, basis, clinical features and complications of polycystic kidney disease.
3. Describe different types and pathogenesis mechanisms of glomerulonephritis.
4. Differentiate between nephrotic and nephritic syndrome. List the diseases included in these categories, their etiology and pathogenesis mechanisms (membranous, minimal change, membranoproliferative & acute post streptococcal glomerulonephritis).
5. Discuss the etiology, clinical course, pathogenesis and complications of acute pyelonephritis.
6. Discuss pathogenesis mechanism, morphology clinical features and complications of chronic pyelonephritis.
7. Define acute tubular necrosis, its pathogenesis and clinical course.
8. Differentiate between benign and malignant nephrosclerosis. (on the basis of clinical date). Discuss the pathogenic mechanism, morphology and clinical course (Gross & microscope picture).
9. Discuss the pathogenesis, clinical features and lab diagnosis of nephrolithiasis. List the various types of renal stones.
10. Define hydronephrosis, what are its causes, clinical features and complications.
11. Discuss the epidemiology, morphology and clinical features (paraneoplastic syndrome) of renal cell carcinoma.
12. Describe the clinical features, morphology and prognosis of Wilm's tumor.
13. Describe the etiology, morphology & clinical features of cystitis.
14. Describe the clinical features, etiology and morphology of transitional cell carcinoma of the urinary bladder.

## 7. MALE GENITAL SYSTEM

1. Discuss the following congenital conditions Hypospadias Undescended testis
2. Describe the etiology, route of infection, pathogenesis and methods of diagnosing urethritis. Gonococcal Non gonococcal
3. Discuss the etiology, pathogenesis and natural history of Prostatitis Prostatic hyperplasia Prostatic carcinoma
4. Discuss the causes, pathogenesis and clinical features of scrotal swelling Testicular adnexa Varicocele Hydrocele Spermatocele Testis and epididymis Inflammation (Orchitis) Epididymitis Tumor
5. Discuss the causes, pathogenesis and relevant investigations of male infertility.
6. Classify the tumors of the male genital tract. Prostate Testis

## 8. FEMALE GENITAL SYSTEM

1. List the causes, routes of infection & methods of diagnosis of sexually transmitted diseases. List the micro-organisms involved, route of infection, pathogenesis and methods of diagnosing the following:
2. Gonorrhoea, syphilis, chlamydia, HPV, herpes simplex and trichomonas vaginalis.
3. Classify the neoplasms of cervix with special reference to cervical intraepithelial neoplasia.
4. Describe the clinical features and pathogenesis of adenomyosis and endometriosis.
5. Describe the causes, pathogenesis and clinical features of dysfunctional uterine bleeding with special reference to endometrial hyperplasia, endometrial polyp and carcinoma.
6. Classify tumors of the uterus.
7. Classify tumors of the ovary.
8. Describe the etiology, clinical features and pathogenesis of ectopic pregnancy and toxemia of pregnancy.
9. Classify gestational trophoblastic tumors with special reference to their clinical features.

## 9. BREAST

1. List the causes of lump in the breast and discuss etiology, pathogenesis, morphology, clinical features and natural history of
2. Mastitis
3. Fibrocystic disease of the breast
4. Benign tumors of the breast (Fibroadenoma and Phyllodes tumor)
5. Carcinomas of the breast (Ductal and Lobular)
6. List the causes of nipple discharge with special reference to intraductal papilloma.
7. Describe gynecomastia, and list its causes.

## 10. MUSCULOSKELETAL SYSTEM

1. Describe the pathogenesis and clinical features of each of the following  
**Achondroplasia. Osteogenesis imperfecta. Osteoporosis**  
List the causes of osteoporosis.  
Describe the pathogenesis, morphological and clinical features of osteoporosis.
2. **Osteomyelitis** with respect to Common causative micro-organism  
(Staphylococcus aureus, Pseudomonas, Escherichia coli, group-B Streptococci, Salmonella, Mycobacterium tuberculosis).  
Common routes of spread  
(Hematogenous, direct extension from the focus of infection, traumatic implantation).

Complications.

Differentiate between acute and chronic osteomyelitis.

List the common sites involved in **tuberculosis osteomyelitis** (vertebral bodies, long bones).

3. Describe the pathogenesis, morphological and clinical features of **Paget's disease** (osteitis deformans).
4. List the benign and malignant **bone forming tumors. Osteogenic sarcoma**  
List the common sites (lower end of femur, upper end of tibia, upper end of humerus).  
Describe the morphological and clinical features of osteogenic sarcoma.
5. List the benign and malignant **cartilaginous tumors**.
6. **Chondrosarcoma** with respect to Peak incidence (sixth decade) Common sites of origin (shoulder, pelvis, proximal femur, and ribs) Morphological and clinical features.
7. **Giant cell tumors of bone** List the most frequent sites (distal femur, proximal tibia, proximal humerus and distal radius)  
Describe the clinical and morphological features of giant cell tumors of bone.
8. **Ewing's sarcoma** with respect to Peak incidence (second decade) Common sites of origin (femur, tibia, pelvis) Chromosomal abnormality t(11:22) (q24; q12).  
Morphological and clinical features.
9. **Osteoarthritis** Describe the pathogenesis, morphological and clinical features
10. **Rheumatoid arthritis** with respect to Pathogenesis Morphological and clinical features
11. **Gout** Classification. Describe the pathogenesis, morphological and clinical features of gout.
12. **Duchenne muscular dystrophy** Describe the pathogenesis, morphological and clinical features of Myotonic dystrophy
13. List congenital myopathies (central core disease, nemaline myopathy and centronuclear myopathy).
14. List inflammatory myopathies (dermatomyositis, polymyositis and inclusion body myositis).
15. Describe the clinico-pathological features of **myasthenia gravis**.
16. Differentiate between lipoma and liposarcoma.
17. Describe **rhabdomyosarcoma** with respect to Peak incidence (1<sup>st</sup> decade of life).  
Histological variants (embryonal, alveolar, sarcoma botryoides, pleomorphic).  
Frequent sites (head & neck region, genitourinary, retroperitoneum).

## 11. ENDOCRINE SYSTEM

### Pituitary

1. List the causes of hypopituitarism.
2. Describe the morphology and clinical features of pituitary adenomas.
3. Describe the clinical features of acromegaly and gigantism.
4. List the causes of hypopituitarism.
5. Describe the etiology, pathogenesis and clinical features of Sheehan's syndrome
6. Dwarfism
7. Describe the etiology factors, clinical features, and pathogenesis and lab findings in inappropriate secretion of ADH.

### **Adrenal Cortex and Medulla**

8. List the causes of adrenal cortical hyper function.
9. Describe the etiology, pathogenesis clinical features and lab diagnosis of Conn's syndrome Adrenogenital syndrome. Cushing syndrome
10. List the causes of hypofunction of adrenal cortex.
11. Describe the etiology, pathogenesis, and clinical features of Addison's disease.
12. List the tumors of adrenal medulla and cortex.
13. Describe the clinical features and diagnosis of pheochromocytoma.

### **Thyroid**

14. List the etiology and clinical features of hyperthyroidism.
15. List the etiology and clinical features of hypothyroidism including Cretinism Myxedema.
16. Discuss the investigation/lab tests for diagnosis of thyroid dysfunction.
17. Define goiter and list its types (diffuse and multinodular).
18. Describe the etiology, pathogenesis and clinical features of diffuse and multinodular goiter.
19. List the causes of solitary thyroid nodule and discuss the diagnostic approach.
20. Describe the types, with pathogenesis, morphology and clinical features of thyroiditis with special reference to auto-immune thyroiditis (Hashimoto's thyroiditis and Grave's disease).
21. Classify the etiology, pathogenesis, morphology and clinical features of Follicular adenoma papillary carcinoma Follicular carcinoma medullary carcinoma.
22. List the types of MEN syndromes.

### **Parathyroid**

23. List the etiologic factors and clinical features of hyperparathyroidism.
24. List the etiologic factors and clinical features of hypoparathyroidism
25. Differentiate between primary, secondary and tertiary hyperparathyroidism.
26. Discuss calcium homeostasis and causes of hyper and hypocalcemia.

## **12. SKIN**

1. Define the following macroscopic and microscope terms:
2. Macule, papule, nodule, plaque, vesicle, bulla, blister, pustule, scale, lichenification, excoriation, hyperkeratosis, parakeratosis, acanthosis, dyskeratosis, acantholysis, papillomatosis, lentiginous spongiosis.
1. Describe the morphological and clinical features of urticaria.
2. Classify eczematous dermatitis.
3. Describe the etiology and pathogenesis of Contact dermatitis Atopic dermatitis Drug related eczematous dermatitis Photoeczematus eruptions Primary irritant dermatitis
4. Describe the morphological and clinical features of acute eczematous dermatitis.
5. List the conditions which are associated with erythema multiforme.
6. Describe the clinical features of erythema multiforme.
7. Describe the pathogenesis, morphological and clinical features of psoriasis.
8. Describe the variants of pemphigus with respect to frequent site of involvement and clinical features.
9. Discuss the pathogenesis of pemphigus.
10. Describe the clinical and morphological features of bullous pemphigoid.
11. List the pre-malignant epithelial lesions.
12. List the types of warts and their most frequent locations.
13. List the predisposing factors of squamous cell carcinoma of skin.

14. Describe the clinical and morphological features of basal cell carcinoma.
15. List the types of Nevocellular Nevi (congenital nevus, blue nevus, spitz's nevus, halo nevus, dysplastic nevus) along with their clinical significance.
16. Describe the clinical and morphological features of dysplastic nevi.
17. Describe malignant melanoma with respect to frequent site of origin, clinical and morphological features.

### 13. NERVOUS SYSTEM

1. Describe clinico-pathological features of hydrocephalus.
2. Describe the categories of cerebral edema (vasogenic & cytotoxic).
3. List the types of herniation of brain along with clinical significance.
4. Describe the clinical and morphological features of intra-cranial hemorrhage.
5. Differentiate between acute purulent meningitis and acute lymphocytic meningitis.
6. List the etiologic agents of chronic meningitis (mycobacterium tuberculosis, Cryptococcus neoformas, Treponema pallidum).
7. Describe clinical and morphological features of chronic meningitis.
8. List the route of infecting agents causing brains abscess
9. Describe the clinical and morphological features of brain abscess.
10. Describe the clinical and morphological features of tuberculosis meningitis.
11. List the causative organisms of viral encephalitis (herpes simplex virus, cytomegalovirus, HIV, JC virus, arbovirus).
12. Describe clinico-pathological features of Guillain Barre Syndrome.
13. List the infectious agents associated with polyneuropathies (leprosy, C. diphtheria, Varicella-zoster virus).
14. List the organic and inorganic compounds which can produce toxic neuropathy (organophosphorus esters, vincristine, acrylamide, hexame, ethanol, arsenic and lead).
15. List the important types of intracranial tumors (astrocytoma, oligodendrogliomas, ependymoma, medulloblastoma and meningioma) along with clinical significance of glial tumors.
16. List the frequent metastatic tumors to the brain (carcinoma of the lung, breast, malignant melanoma, leukemia and lymphoma).
17. List common primary peripheral nerve sheath neoplasms along with their clinical significance.

### 14. CHEMICAL PATHOLOGY

1. Introduction to chemical pathology, reference/ranges conventional and SI units.
2. Renal functions.
3. Causes of proteinuria and its lab diagnosis.
4. Lab diagnosis of acid base disorders.
5. Lab diagnosis of diabetes mellitus.
6. Liver function tests.
7. Lab diagnosis of hyperlipidemia and its clinical interpretation.
8. Role of enzymes in diagnosis of pancreatitis.
9. Lab diagnosis of inborn errors of metabolism.
10. Lab diagnosis/investigations of endocrine disorders:-
  - i. Thyroid function tests.
  - ii. Adrenal function test.
  - iii. Lab diagnosis of hyper and hypoparathyroidism.
  - iv. Role of hormone estimation in diagnosis of infertility.
  - v. Role of hormone estimation in diagnosis of growth disorder.



**LIST OF PRACTICALS / OSPEs**

<b>1</b>	<b>Cardiovascular system</b>	Atheroma, Valvular vegetations, Monckeberg sclerosis
<b>2</b>	<b>Respiratory System</b>	Pneumonia: TB lung, Emphysema, Anthracosis, Carcinoma lung.
<b>3</b>	<b>Breast</b>	Fibroadenoma of Breast; Carcinoma Breast, Fibrocystic Disease, Paget's Disease,
<b>4</b>	<b>Liver</b>	Cirrhosis of Liver; Carcinoma Liver, Gall bladder stones, Ch. Cholecystitis. Viral Hepatitis
<b>5</b>	<b>GIT</b>	Barret's Esophagitis, Peptic Ulcer, Gastric Carcinoma. Acute Appendicitis; Adenocarcinoma of Gut; Ch. Cholecystitis, Rectal Polyp; Carcinoma Colon; Crohns Disease; Ulcerative Colitis; TB Intestine; Typhoid;
<b>6</b>	<b>Female system</b>	Leiomyoma of Uterus; Ca. of Cervix; Endometrial Carcinoma, Cystadenoma Ovary; Teratoma of Ovary; Ovarian Tumors; Endometriosis;
<b>7</b>	<b>Male System</b>	BPH; Carcinoma Prostate; Testicular Tumors.
<b>8</b>	<b>Renal System</b>	Chronic pyelonephritis; Hydronephrosis, Renal Cell Carcinoma, Transitional Cell Carcinoma - Bladder, Renal Stones, Wilms Tumor, Polycystic Kidney.
<b>9</b>	<b>Endocrines</b>	Goiter; Papillary Carcinoma of Thyroid, Follicular Adenoma Thyroid, Cushing Syndrome, Addison's Disease
<b>10</b>	<b>Bones &amp; Joints</b>	Giant Cell Tumor; Osteosarcoma, Ewing's Sarcoma, Osteomyelitis, Osteoarthritis, Rheumatoid arthritis
<b>11</b>	<b>Skin</b>	Sq. Cell Carcinoma; Basal Cell Carcinoma; Sq. Papilloma.
<b>12</b>	<b>CNS</b>	Meningioma, Meningitis,
<b>13</b>	<b>RBCs</b>	Anemia (Iron Deficiency. Megaloblastic, Aplastic anemia), Thalassemia
<b>14</b>	<b>WBC</b>	Acute/chronic Lymphocytic Leukemia, Acute/chronic Myeloid Leukemia, Hodgkins lymphoma, Burkitt's Lymphoma, ESR tube, Bone marrow needle,
<b>15</b>		Multiple myeloma, DIC

**ALL TEACHING MATERIAL SHARED/COVERED DURING PRACTICAL TIME IS TO BE PRINTED & PASTED/WRITTEN IN THE PRACTICAL NOTE BOOK.**

**NOTE-BOOK required for practicals:**

1. Ordinary practical note book – Interleaf
2. Separate copy for assignments

## ASSESSMENT

- Both Formative and Summative assessments are carried out.
- **Formative assessment** is done during tutorials and practical discussions.
- **Summative assessment** is done following the guidelines of University of Health Sciences.
- Multiple assessment methods are used i.e. MCQs, SEQs, OSPE, Table viva, Written assessment.
- **Assessments during the session** comprise of
  1. Class tests conducted on **Last Friday OF EVERY MONTH** and consist of all the syllabus covered during the previous month.

Test format is as follows:

30 MCQs + 4-5 SEQs (Total marks of paper will be 50.)

2. Written Assignments will be given to students who are not performing to ability and weightage of the work is added in the internal assessment.
3. OSPE sessions are conducted twice a year as a practice for university examination.
4. Midterm exam is taken on the pattern of University exam before the students go for summer break
5. Sendup exam is taken on the pattern of University exam near the end of session and before the students go for preparatory exam leave.
6. Midterm and Sendup format is as follows:

65 MCQs + 14 SEQs + 5 marks for practical copy.

Total marks of paper are 140 (65 + 70 + 5).

## UNIVERSITY PROFESSIONAL EXAMINATION

is scheduled after 36week session ends.

## FEEDBACK

Written Student feedback is taken at the end of each system.

## INTERNAL ASSESSMENT

10% internal assessment of the students (as specified by UHS), is maintained and calculated at the end of session.

The criteria for calculation is as follows

- 10 % of total marks
- Total marks = 300
- Internal Assessment = 30 (15 marks in theory + 15 marks in Practical)
- Approximate weightage
  - Attendance 20% of total (6/30)
  - Assessment 60% each of total (18/30)
  - Behavior/Professionalism 20% of total (6/60)
- Break-up of 30 marks

Lecture/Practical attended	Test average	Midterm	Sendup	Behavior	Total
6	6	6	6	6	30

Lectures/ Practical attendance scale	
>90%	6
80 - 89%	5
70 - 79%	4
60 - 69%	3
50 - 59%	2
<50%	1

Tests, Midterm and Sendup scale	
>75%	6
65 - 75%	5
55 - 64%	4
45 - 54%	3
35 - 44%	2
<35%	1

## **TEACHING MATERIAL**

### **Text Books**

1. Basic Pathology by Cotran & Kumar (Medium Robbins)
2. Robbins Pathology 10<sup>th</sup> edition (Big Robbins)

### **REFERENCE BOOKS**

Pathology Practical Book by Harsh Mohan

[https://docs.google.com/file/d/0BxvjJ4mG\\_bfYZXUwWFJmM1p3bTg/edit](https://docs.google.com/file/d/0BxvjJ4mG_bfYZXUwWFJmM1p3bTg/edit)

Davidson's Principles of Medicine (Students are advised to buy this in 4<sup>th</sup> yr)

### **TEST PREP**

Review of pathology – Robbins and Pre-test in Pathology  
Concise Pathology for Exam Preparation by Bhattacharya

### **Web-sites**

1. PEIR Net - Pathology Education Internet Resources  
<http://peir.path.uab.edu/>  
University of Alabama at Birmingham  
Images, links to additional pathology resources.
2. WebPath - The Internet Pathology Laboratory for Medical Education  
<http://www-medlib.med.utah.edu/WebPath/webpath.html>  
Dr. Edward Klatt, Florida State University  
Tutorial, images, quizzes.
3. The Virtual Slidebox - University of Iowa  
<http://www.path.uiowa.edu/virtualslidebox/>  
Includes several, searchable collections of histology and histopathology slides.  
Also a series of cases which include case histories as well as gross and microscope sections to illustrate case material (see additional material at [http://www.medicine.uiowa.edu/pathed/virtual\\_laboratory/](http://www.medicine.uiowa.edu/pathed/virtual_laboratory/)).
4. University of Connecticut - Virtual Pathology Museum - PathWeb  
<http://pathweb.uchc.edu/>  
Fairly extensive image database with descriptions and links to additional resources.
5. University of Washington - Department of Pathology  
<http://www.pathology.washington.edu/galleries/>  
Image collection with short descriptions.
6. Cornell University Medical College - Pathology Image Collection  
[http://edcenter.med.cornell.edu/Courseware/Pathology\\_Image\\_Collection.html](http://edcenter.med.cornell.edu/Courseware/Pathology_Image_Collection.html)  
Images.
7. <http://library.med.utah.edu/WebPath/webpath.html>
8. Pathguy <http://www.pathguy.com/>

**PUBLIC HOLIDAYS - 2022**

<b>Date</b>	<b>Day</b>	<b>Holiday</b>
23 Mar	Wed	Pakistan Day
2 - 5 May	Mon - Thu	Eid ul-Fitr
16 June – 16 July		Summer break expected
9 - 12 July	Sat - Tue	Eid ul-Azha
7 - 8 Aug	Sun - Mon	Ashura
14 Aug	Sun	Independence Day
7-8 Oct	Fri-Sat	Milad un-Nabi
25 Dec	Sun	Quiad-e-Azam Day
24 Dec - 1 Jan 2023		Winter Break expected