



Pathology Academic Laboratory User Handbook



**Department of Pathology
Brahmanbaria Medical College**

Department of Pathology
Brahmanbaria Medical College
Pathology teaching laboratory, User Handbook

Name of lab: Pathology Teaching Laboratory, BMC

Name of In-charge: Dr.Taposhi Rabaya

Serial No	Content	Page No
1	Introduction	3
2	Objectives	
3	Faculty	4
4	List of competencies to acquire	5
5	Consolidated teaching hours	5
6	Practical class schedule	5
7	Content of Practical	
8	Laboratory Protocol	7
9	Teaching aids/ Instructional materials Instrument Histopathological Slides Reagent Gross Morphology	8-10
10	Marks distribution in 3"* Professional Examination, Practical	11
11	Guideline for OSPE and Traditional Practical	12

Introduction:

Pathology is the discipline that involves both basic science and clinical practice. Pathology explains cause, mechanism and outcome of various diseases by the use of various laboratory investigations and morphologic and molecular techniques. Pathology provides a sound foundation for rational clinical care and therapy. Therefore the knowledge of pathology helps to become a good physician. Department of Pathology of Brahmanbaria Medical College is dedicated to give quality education and to provide diagnostic services to the patients attending the IPD and OPD.

The Department of Pathology of BMC is located at the 4th floor of the academic building.

The Department has a well-equipped Pathology practical room, a museum and tutorial rooms. A modern service laboratory situated on the first floor of the hospital building.

As per new rule (updated 2021) of BMDC, study of pathology will start in 2nd phase; the comprehensive course will continue for two years with 95 hours lecture classes, 94 hours tutorial and 34 hours practical classes. The total teaching hours are 223 hours. The course will be evaluated by 3' professional examination.

Objective:

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. Interpret biochemical reports.
5. Identify gross pathological changes in the tissues by looking at a specimen.
6. Identify under the microscope diagnostic histological features of a disease.
7. Draw and label the microscopic histology of a specific disease.

Faculty:

Name	Designation	Role
Dr. Abu Anis Khan	Associate Professor and Head	Chief Supervisor
Dr. Shamim Ahamed	Assistant Professor	Supervisor
Dr. Afroz Shirin	Assistant Professor	Observer
Dr. Taposhi Rabaya	Lecturer	Lab In-charge
Dr. Faddela Samiha Binte Alam	Lecturer	Demonstrator
Dr. Monimoy Deb Shovo	Lecturer	Demonstrator
Md.Mostafizur Rahman	Lab Technologist	Maintenance

List of competencies to acquire:

1. Writing a histo-pathological requisition form.
2. Preservation of surgical specimens in Upazila health complexes and district hospitals and preparation of fixative for surgical specimens in 10% formalin.
3. Sending of surgical specimens from Upazila health complexes and district hospitals to nearby medical college and larger hospitals where histopathology service is available.
4. Collection of Paps' smear/ FNAC from superficial mass lesions.
5. Preservation of cyto-pathological smears.
6. Sending of cytopathology specimens from Upazila health complexes and district hospitals to nearby medical college and larger hospitals where histopathology and cytopathology service is available.
7. Preservation of surgical specimens for immunohistochemistry and immunofluorescence.
8. Writing a requisition form for Immunohistochemistry or Immunofluorescence examination.
9. Determination of H6%, ESR, TC & DC of WBC, total count of eosinophil, BT and CT, Platelet count.
10. Preparation of stain and comment on PBF.
11. Performing routine urinary examination at health complexes.
12. Handling and maintenance of Microscope.
13. Performing semen analysis.
14. Performing microscopic examination of fluid-CSF.
15. Interpretation of pathology reports and data.
16. Writing advice for pathological investigations.

Consolidated teaching hours in Phase II and Phase III:

Phase II (3 year): 7 hours

Phase III (4 year): 27 hours

Practical class schedule: One 60 min sessions per month will be held in every alternate Thursday in 3rd year and one 60 min sessions per month will be held in every alternate Sunday in 4th year.

Contents of practical

SL NO	Contents	Teaching Hour
1	Acute Inflammation	01
2	Chronic inflammation	01
3	Hyperemia, congestion, haemorrhage & Shock	01
4	Growth disturbance and adaptive change	01
5	Neoplasia	03
6	Haematopathology: Introduction, PBF, Bone marrow, Leukocytosis.	01
7	Acute Inflammation	01
8	Lymphoreticular System	01
9	Haematopathology -Hb disorder	02
10	Haematopathology -Leukaemia	02
11	Haematopathology Haemorrhagic disorder-ITP, DIC, Haemophilia	01
12	Haematopathology - Multiple myeloma	01
13	Interpretation on respective reporting Instrument demonstrations	01
14	Heart	01
15	Respiratory system	01
16	GIT.	03
17	Body fluid analysis	01
18	Hepatobiliary system, LFT	01
19	Renal system. Renal function test	02
20	Semen analysis	01
21	Female genital system	02
22	Breast	01
23	Endocrine system: Thyroid	01
24	Endocrine pancreas and diabetes mellitus	01
25	Skin	01
26	CNS. CSF	01

Laboratory Protocol:

A) No entry without permission:

1. Outsiders are not allowed to enter the laboratory without permission.
2. No student is allowed to enter the laboratory unless permission has been given by a laboratory assistant or a lecturer.

B) At work in the laboratory: -

1. No experiment may be attempted without the knowledge and permission of a lecturer.
2. Students must wear shoes in the laboratory. Students wearing slippers or sandals are not allowed to work in the laboratory.
3. Apron must be worn at all times during practical work in the laboratory.
4. Do not eat or smoke in the laboratory.
5. Do not taste any chemicals, including dilute solutions. If any acid or alkali accidentally enters your eyes or mouth, wash immediately with plenty of tap water.
Inform your lecturer, and seek medical attention if necessary.
6. Do not use spirit lamp without permission.
7. Used match sticks, filter papers, and other solid waste must never be thrown into the sinks. They must be thrown into the dustbins provided.
8. Any equipment broken or damaged must be reported to the laboratory assistant.

C) Before leaving the laboratory:

1. All the equipment and benches must be cleaned at the end of each practical session.
2. Wash hands and arms with soap and water before leaving the laboratory.

No student is allowed to take away any chemicals, equipment or other property of the laboratory.

Instrument master list

- Bino-ocular and teaching microscope
- Microscope with projection in LED monitor
- Computer
- Haemocytometer
- Haemometer
- RBC pipette. WBC pipette, Shahli's Haemoglobin Pipette. Shahli's Haemoglobin Tube
- Westergren ESR tube
- Wintrob Tube
- ESR stand
- Core biopsy needle
- Bone marrow aspiration needle
- Trephine biopsy needle
- Lumber puncture needle
- Vacutainers with Vacupuncture needle
- Reagent strip for Urine
- Esbach's Albuminometer
- Urinometer
- Coplin's jar
- Block Moulds
- Tissue Cassete
- Wooden Ayer's spatula
- Microtome

Teaching of Practical Histopathological Slides

SL NO	Name of the teaching slides	Learning objectives	Example in clinical settings
1	Acute appendicitis	Congestion	Lung, Ovary
		Suppuration	Soft tissue
		Ulcer	GIT, Skin
		Edema	GIT mucosa, Lung, Brain
2	Tubercular lymphadenitis	Granuloma	LN, Lung, GIT, Kidney, Bone, Brain
		Caseous necrosis	TB
3	Chronic cholecystitis	Chronic inflammatory cells, Fibrosis	Chronic tonsillitis, Salpingitis, Pyelonephritis
4	Nodular hyperplasia of prostate	Hyperplasia Prostate,	Endometrium, Liver, Thyroid
5	Squamous cell carcinoma	Anaplasia Invasion Dysplasia	Skin, Tongue, Esophagus, Cervix, Lung
6	Leiomyoma	Benign tumor	Lipoma, Fibroadenoma, Hemangioma, Neurofibroma
7	Cervical polyp	Polyp	GIT, Skin, Nasopharynx
8	Nodular goiter	Inflammation Hemorrhage Calcification	Fat necrosis, Tuberculosis
9	Rhinosporidiosis	Infection	TB, Leprosy, Leishmaniasis, Amebiasis, Hydatid cyst
10	Adenocarcinoma of colon	Adenocarcinoma	GIT, Breast, Lung, Liver, Ovary, Salivary gland
11	Peripheral blood film: Normal	Morphology of RBC, WBC, Platelet Differential count of WBC	
12	Peripheral blood film	Neutrophilia, Lymphocytosis, Eosinophilia	Bacterial Infection Viral Infection Allergic reaction
13	Peripheral blood film: Anaemia	MHA, NNA, Macrocytic anaemia, Haemolytic anaemia.	
14	Peripheral blood film: Leukaemia	AML, CLL	

Reagent list:

- Leishman stain
- 3.8% sodium citrate
- Antisera for blood grouping
- Acetic acid
- Benedict solution
- 95% Ethyl Alcohol
- Jar with 10% natural buffered formalin

GROSS MORPHOLOGY			
Specimen	Gross morphology	Specimen	Gross morphology
APPENDIX-	ACUTE APPENDICITIS/ACUTE INFLAMMATION	OBSTRUCTIVE BOWEL DISEASE	GROWTH IN COLON
GALL BLADDER	CHRONIC INFLAMMATION	THYROID	NODULAR GOITER
POLYP	GIT (STOMACH/COLON).	BONE	OSTEOSARCOMA
CERVIX	CARCINOMA	LIVER	CIRRHOSIS
UTERUS	LEIOMYOMA	OVARY	CYST. TUMOR
BREAST	CARCINOMA		

CASE HISTORIES	
1. Pneumonia	8. Rheumatic fever
2. COPD	9. Peptic ulcer
3. Lung carcinoma	10. Breast carcinoma
4. Thalassemia	11. Diabetes mellitus
5. Leukemia	12. Nodular goiter
6. AGN	13. Chronic liver disease
7. Nephrotic syndrome	14. Tuberculosis

Marks distribution in 3d Professional Examination, Practical:

OSPE and Traditional Practical Examination: Total marks: 100 pass marks: 60%

Marks distribution:	Marks
OSPE (10 station: 8 question station, 2 procedure station)	50
Practical note book	05
Case report (total 5) + integrated assignment (Total 2)	05
Traditional	40
Total	100

Guideline for OSPE and Traditional Practical

Guidelines for OSPE:

Number of station: 10 (5 from term I, 5 from term II)

Time for each station: 3 minutes

Marks in each station: 5

Contents of OSPE

No	Task	Marks
1	2 Histopathology Slides/ Photomicrograph	5x2=10
2	2 Haematolymphoid Slides/ Photomicrograph-	5x2=10
	Scenario based, data interpretation / normal values of biochemical test	2x5 =10
4	Specimen	5x1=5
5	Instruments/ Regents	5x1=5
6	Two procedure station (arranged on the day of Viva)	5x2=10

Guidelines for Traditional Practical

No	Task	Marks
1	1 unstained slide supplied, do leishman stain. DC and make comment	8
	Stain PBF for comment	5
	2 Histopathological slides; diagnosis and identification of points	8x2=16
4	1 Data interpretation/ Problem based question	5
5	Urine (containing Pus cell, RBC, Epithelial cells, cast/crystal) may be focused	2
6	Performed Benedict test/ Heat coagulation test with interpretation.	4