



In the name of God, the Most Gracious, the Most Merciful

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INTRODUCTION

The objective of the Postgraduate Medical Institute is to promote the Postgraduate Medical Education amongst the doctors by designing postgraduate medical studies programs in Balochistan keeping in view the provincial needs.

To achieve this objective the Postgraduate Medical Institute has developed structured training programs for specialist to be utilized in the health care facilities of tertiary and secondary levels. Beside clinical sciences the

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institute is also running Postgraduate training programs in Basic Medical Sciences.

The Postgraduate Medical Institute possesses all the relevant learning facilities like qualified and well trained faculty, teaching hospitals, libraries, lecture halls, clinicopathological conference halls, laboratories, audiovisual aids, internet access, etc.

The Postgraduate Medical Institute is affiliated with University of Balochistan. The format of the examination has been improved with more valid objectives and reliable methods of assessment. To ensure the fairness and transparency the institute has introduced the use of assessment forms for scoring of all components of clinical and oral examination.

This booklet contains the information for the candidate of Diploma in Clinical Pathology (DCP) regarding eligibility criteria for admission to the course details of training program, Syllabus, Objective of the training program and format of examination.

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ELIGIBILITY CRITERIA FOR DCP COURSE

Requirements for Admission in Diploma in Clinical Pathology (DCP) for Session 2013-15.

- MBBS or equivalent qualification registered with the PMDC.
- One year House job in a teaching hospital six months of which should preferably be in the specialty of pathology.
- Only those doctors are eligible who are in the active service of Government of Balochistan for a minimum period of two years.
- Selection through entry test and selection committee approval.

TRAINING PROGRAM

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The duration of program for Diploma in Clinical Pathology (DCP) is two years. In this duration the trainees are suppose to attend the formal lectures in the relevant sciences but simultaneously trainees start their clinical programme which is specially designed for acquisition of knowledge, attitude and skill in the relevant field. It includes lectures, laboratory practical work, clinicopathological conferences, literature review, clinical presentations, and procedural skill.

This duration of two years is divided into various disciplines as given below:

- 1. Haematology 22 Weeks. • 2. Chemical Pathology
22 Weeks.
- 3. Morbid Anatomy and Histopathology 22 Weeks.
- 4. Microbiology 22 Weeks.

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AIMS AND OBJECTIVES OF THE COURSE

The aim of 2 years diploma programme in Clinical Pathology is to equip medical graduates with adequate theoretical knowledge and practical expertise in the field of Pathology which would enable these pathologists to administer and effectively run the labs at primary and secondary health care centers and tertiary care hospitals as Clinical Pathologists.

OBJECTIVES

DCP training should enable a student to:

- Learn the details of quality assurance/ quality control in all the four disciplines of pathology.
- Understand the significance of pre-analytic, analytic and post-analytic errors in all the four disciplines of pathology
- Execute proper collection and dispatch of samples from the patient to the local or distant referral labs for all the 4 disciplines.
- Understand the technical details of semi-automated and fully automated latest lab equipment.
- Interpret results with a sound theoretical background knowledge correlating the lab results
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with clinical profile of the patient and communicate with, and discuss the results with consultants if necessary.

- Work independently and organize the staff at DHQ & THQ labs .
- Assess and formulate the demands for technical staff and lab equipment to be forwarded to competent higher authorities for sanction.
- Train the lab staff for routine work and quality control.
- Be aware of latest information about lab equipment, kits, techniques and guidelines of International clinical Pathology services,
- Show initiative, be progressive and become life long self-directed learner .
- Understand ethics in delivering pathology services

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SYLLABUS

Part-I Syllabus.

1. General Pathology

Cell Injury and adaptation

- Reversible and Irreversible Injury
- Fatty change, Pigmentation, Pathologic calcification
- Necrosis and Gangrene

Cellular adaptation

- Atrophy, Hypertrophy,
- Hyperplasia, Metaplasia, Aplasia

Inflammation

- Acute inflammation --- Vascular changes, Chemotaxis, Opsonization and Phagocytosis
- Enlist the cellular components and chemical mediators of acute inflammation
- Differentiate between exudates and transudate
- Chronic inflammation
- Etiological factors, Granuloma

Cell repair and wound healing

- Regeneration and Repair
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- Healing--- steps of wound healing by first and second intention
- Factors affecting healing
- complications of wound healing

Haemodynamic disorders

- Define and classify the terms Edema, Haemorrhage, Thrombosis, Embolism, Infarction & Hyperaemia
- Define and classify Shock with causes of each.
- Describe the compensatory mechanisms involved in shock
- Describe the pathogenesis and possible consequences of thrombosis
- Describe the difference between arterial and venous emboli

Neoplasia

- Dysplasia and Neoplasia
- Differences between benign and malignant neoplasms
- Enlist the common etiological factors for neoplasia
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- Define and discuss the different modes of metastasis
- TNM staging system and tumor grade **Immunity and Hypersensitivity**
- Humoral and cell mediated immunity and types of Hypersensitivity with examples.

Part-II Syllabus

HAEMATOLOGY

- SECTION I

(PHYSIOLOGY OF HAEMATOLOGY)

Blood composition and functions.

Bone marrow structure and functions Haemopoiesis

- | | |
|--|------------------------------------|
| <p>A. Erythropoiesis
Myelopoiesis
Red Blood Cell. All aspects including function, membrane metabolic pathways (including iron B12 and folic acid metabolism and destruction.</p> | <p>B.
C. Thrombopoiesis 4.</p> |
|--|------------------------------------|
5. White blood cells. Structure, Function, Lymphopoiesis and Mononuclear Phagocyte system (MPS).
 6. Platelets. Structure and functions.

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7. Haemostasis. Coagulation factors, Coagulation Cascade and Fibrinolysis

8. Immunology

9. Blood grouping.

PRACTICALS.

- Safety and quality control in haematology lab
- Sample Collection and use of anticoagulant in haematology.
- Determination of ESR.
- Hb Estimation.
- Enumeration of RBC Count. • Enumeration of WBC Count.
- Enumeration of Platelet Count.
- Enumeration of Reticulocyte Count
- Preparation and staining of thin and thick smear.
- Differential Leucocytes count.
- Determination of PCV.
- Determination of Bleeding Time.
- Determination of Clotting Time.
- Determination of Osmotic Fragility of RBCs.
- Blood group determination. ABO and Rh group.

- SECTION II

(HAEMATOPATHOLOGY)

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This section deals with the Pathological changes brought about by various blood diseases.

- LECTURES.
- RED CELL DISORDERS.

1. Red cells. Size and shape abnormalities
 2. Introduction classification and approach to diagnosis of anemia.
 3. Microcytic hypochromic anemias.
 - a. Iron deficiency anemia
 - b. Thalassemia
 - c. Anemia of Ch Diseases.
 - d. Anemia of lead poisoning
 - e. Sideroblastic anemia.
 4. Normocytic normochromic anemias a.
Hemolytic Anemia
 - i. Hereditary
 - ii. Acquired.
 - a. Anemia of Ch. Diseases.
 - b. Anemia of Acute Blood loss
 - c. Anemia of Renal diseases.
 - d. Mixed deficiency anemia.
 - e. Anemia of Bone marrow failure.
 5. Macrocytic anemias.
 - a. Megaloblastic
 - b. Non Megaloblastic. 6.
Haemoparasites and other red cell inclusions.
- Hb Electrophoresis.

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WHITE CELL DISORDERS.

1. Morphological changes of WBC.
2. Quantitative and Qualitative defects of WBC.
3. Leukemia reactions.
4. AML 5. ALL 6. CML 7. CLLL
8. Malignant Lymphoma's.

PLATLET DISORDERS

1. Thrombocytosis.
2. Thrombocytopenia.
3. Thrembophillia.

COAGULATION DISORDERS.

1. Haemorrhagic Disorders.
2. Haemophilia A and B.
3. Von Willebrand's diseases.
4. Other factor's deficiencies.
5. Acquired Coagulation disorders.
6. DIC

OTHERS.

1. Splenomegaly and Hypersplenism.
2. Myeloproliferative disorders.

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- a. Polycythaemia
 rubra vera
 - b. Essential
 Thrombocythaema.
 - c. Myelofibrosis.
 - d. CML
3. Lymphoproliferative disorders.
 4. Myelodysplastic syndrome.
 5. Plasma cell dyscrasia
 6. Lipid storage disorders.
 7. Anticoagulants.
 8. Haemochromatosis and Porphyrias.
 9. Hematological changes in systemic disease.
 10. Pregnancy and Haematology.
 11. Stem cell and Bone Marrow Transplantation.
 12. Instruments.

BLOOD BANKING.

1. Blood Groups & Cross Match.
2. Criteria of Donor Selection.
3. Blood reactions.
4. Blood Components, Preparation, Storage and their indication.

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5. Instruments

PRACTICALS.

1. PT
2. APTT
3. TT
4. Fibrinogen titre.
5. FDPs
6. Fetal Hb.
7. Hb. Electrophoresis.
8. Sickling Test.
9. G-6PD Test.
10. Urine for haemosiderin.
11. L.E Preparation.
12. Bone marrow aspiration.
13. Bone marrow trephine.
14. Sudan Black Staining.
15. PAS Staining
16. Iron Staining.
17. Retic staining.
18. Factor assay.
19. Cytology of Fluids.
20. Blood cross matching.
21. Coomb's Test (Direct, Indirect)
22. Blood Screening.
23. Preparation of Blood Components.
24. Determination of Rh. Antibodies.
25. M.P Testing

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CLINICAL HAEMATOLOGY.

1. Management of Thalassaemia
2. Management of Polycythaemia.
3. Management of Haemophilia
4. Management of Iron Deficiency Anemia.
5. Management of Megaloblastic Anemia.
6. Management of ITP.
7. Management of Blood Transfusion Reaction.

SECTION-II

CHEMICAL PATHOLOGY AND ENDOCRINOLOGY

(A) THEORY LECTURES

Biochemical composition and functions of the cell

Cell membranes and their chemical composition

- Importance of lipids and proteins in cell membranes
- Chemistry of signals and receptors
- Membrane transport including active transport, passive transport,
- simple and facilitated diffusion

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- Methods to study cell biochemistry

Acid-base, fluid and electrolyte control

- Homeostasis in human body.
- Interpretation from the body chemistry and variation of fluid pH and electrolytes
- Composition from normal.
- Relation of pH and electrolytes to possible metabolic or respiratory imbalance.
- Relation between body fluid solutes and osmolar regulation

Enzymes

- Classification/ Nomenclature
- Enzymes and catalysts
- Function of enzymes and catalysts
- Co-enzymes and co-factors • Regulation of enzyme activity.

Haemoglobin

Porphyrins and metabolism of Haem

Synthesis and structure of haemoglobin

- Types and function of haemoglobin
- O₂ binding capacity of haemoglobin and factors regulating it
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- Breakdown of haemoglobin, formation of bile pigments their transport and excretion
 - Biochemical causes of hyper-bilirubinaemia and differentiation between different types of jaundice
- Water soluble and fat soluble vitamins.**

- Sources, Chemistry.
- Required daily dietary allowance (RDA) in different physiologic conditions
- Deficiency symptoms.
- Role of vitamins as co-enzymes

Minerals

- Important minerals in human nutrition, sources, biochemical actions and Recommended daily allowance (RDA).

Carbohydrates, Proteins, Fats and Lipids

- Biomedical importance of carbohydrates, proteins, amino acids and lipids
- Digestion, absorption and transport Role in nutrition and homeostasis.
- Separation of proteins, salting out, electrophoresis,
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-

chromatography and centrifugation

Nucleotide And Nucleic Acids

- Nucleotides and their biochemical role
- Structure, function and biochemical role of nucleotides
- Synthesis of purines and pyrimidines and their clinical role
- Structure, function and types of nucleic acids

(B) INSTRUMENTATIONS BIOCHEMICAL TECHNIQUES

- Principle, applications and interpretation of biochemical tests.
- **Techniques being utilized in laboratory for;**
- Spectrophotometry
- Flame Photometry
- Electrophoresis
- Chromatography
- ELISA etc.

(C) • CLINICAL ROTATION AND LABORATORY . (PRACTICAL WORK) IN CHEMICAL PATHOLOGY AND ENDOCRINOLOGY.

CHEMICAL PATHOLOGY AND ENDOCRINOLOGY
INVESTIGATION OF VARIOUS
DISEASES, PRINCIPALS, METHODS OF
DETERMINATIONS AND THEIR CLINICAL
INTERPRETATIONS :-

- (1) Blood Glucose. (i) Glucose Fasting and Random
(ii) OGTT, (iii) HbA1c
- 2) Lipid profile.
 - i. Cholesterol.
 - ii. Triglycerides.
 - iii. HDL-C.
 - iv. LDL-C.
 - v. Total Lipids.
- 3) Renal Profile vi. Urea. vii. Creatinine. viii. Creatinine
Clearance Test ix. 24 hours Urinary Protein.
- 4) Liver functions Tests.
 - x. Bilirubin.
 - xi. ALT. xii. Alk phos.
 - xiii. Gamma GT.
- 5) Cardiac Enzymes.
 - xiv. CPK. xv. AST.
 - xvi. LDH.

(D) MISCELLANEOUS OTHERS

- 6) Uric acid.
- 7) Calcium.
- 8) Magnesium.
- 9) Phosphorous.
- 10) Ferritin.
- 11) TIBC.
- 12) CSF examination.
- 13) Pleural and Acetic Fluid examination.
- 14) Stone Analysis.

15) Urine Chemical examination.

(E) HORMONES ANALYSIS.

16) Thyroid hormones.

(i) T3.

(ii) T 4.

(iii) TSH.

17) Gonadal hormones.

- | | |
|-------------------------------------|--------------------------------|
| i. | LH |
| ii. | FSH |
| iii. | Prolactine |
| v. Progestrone.
(Testosterone). | iv. Oestrogen.
vi. Androgen |

18) Serum Cortisol.

19) Serum HCG.

20) Serum Insulin.

MORBID ANATOMY AND HISTOPATHOLOGY

CLINICAL ROTATION AND LABORATORY WORK.

Fixation:

Different fixatives

Delacification

Processing

Staining

Embedding

Cutting (Types of Microtome)

Special staining

Immuno staining

Frozen sections

Grossing

Interpretation
FNA Procedure

Fluid cytology
Screening reporting
Sputumcytology

Pap smears Screening reporting

Barr Body
Autopsy
Miscellaneous and museum

Techniques

MICROBIOLOGY

Theory

Basic Bacteriology.

Structure Growth and classification of Bacteria

Microbial Genetics

Anti Microbial Drugs and Drug resistance

Sterilization and disinfect ion

Nosocomial infectionSpecial / Clinical Bacteriology.

Gram positive cocci

Gram Negative cocci

Gram Positive Bacilli
Gram Negative Bacilli
Mycobacterium Spp Immunology.
Antigen ,Anti Body, Hypersensitivity types,
Compliment System
Cell Mediated Immunity

H.L.A System Parasitology.

Protozoa,Cestodes and Nematode classification and lifecycle

Leishman Parasites

Malarial Parasites

Virology

General Characteristics and Classification Hepatitis Viruses.

HAV,HBV,HCV,HDV,HEV

HIV, (AIDS)

Mycology (Introduction)

Parasitology

- General parasitology: definitions; classification, source of infection, pathogenecity
- Protozoology
- Entamoeba histolytica;life cycle; amoebic dysentery, complications and diagnosis Flaggelates:
- Intestinal oral and genital flaggelates; giardia ; trichomonas;
- Blood and tissue flagellates;
- Leshmania ; trypanosoma

- Sporozoa: malarial parasite; its life cycle, lab diagnosis; complications
- Helminthology: introduction;
- Cestodes' classification, ;echinococcus granulosis; life cycle, diagnosis
- Trematodes
- Nematodes
- Parasitic opportunistic infections in aids and nosocomial parasitic infections
- Diagnostic procedures in parasitology

MYCOLOGY.

- Basic Mycology.
- Cutaneous & subcutaneous Mycosis.
- Systemic Mycosis.
- Opportunistic Mycoses

Practical

- Staining procedures including
- Simple Staining.
- Gram Staining
- Ziehl-Neelsen (AFB) Staining
- Capsule Staining

- Spore Staining
- Leishman Staining
- Giemsa Staining
- India Ink Stain for Fungal Hyphae.
- Negative Staining

Serological Methods

- Agglutination Test
- Precipitation Test
- Complement Fixation Test
- HoursImmunofluorescence Test
- Radio Immunoassay
- Elisa

Detail Examination of Specimens

- Collection and transport of Specimens
- Culture Media Preparation
- Culture & Sensitivity Methods.
- Examination of Urine Specimen

- Examination of Faecal Specimen
- Examination of Sputum
- Examination of Throat & Mouth Specimens
- Hours Examination of Naso Pharyngeal aspirates,

Paranasal & anterior Nasal Swabs.

- Examination of Ear discharge
- Examination of Eye Specimens
- Examination of Skin ulcers including leishman ulcer and fungal hyphae
- Examination of Urogenital Specimens
- Examination of CSF
- Examination of Effusions Including Ascetic, • Pleural and Pericardial and Synovial Fluids.
- Examination of Seminal Fluids (Semen Analysis)
- Examination of Fungal Specimens (Skin Scrapping)
- Skin and Ulcer Specimens
- Skin and Nasal Smears for Leprosy
- Pus From wounds and Abscesses, Burns and Sinuses

- Blood and Bone Marrow
- Specimen for Viral Studies

- Bacteriological Testing for water supply.

EXAMINATION / EVALUATION.

The evaluation of DCP candidate will be done on the following:-

- | | |
|-------------------------|------|
| 1. Internal Assessment. | 10%. |
| 2. Log Book | 5% |
| 3. Final Examination. | 85%. |

1. Internal Assessment.

Each candidate will be assessed after completion of rotation in each section that is

1. Morbid Anatomy, Histopathology.
2. Haematology.
3. Chemical Pathology.
4. Microbiology.

This evaluation will have 10% in the final examination.

EXAMINATION.

The Diploma in Pathology (DCP) Examination will comprise of two parts. The format of examination shall be as under:-

Eligibility to appear in Part – I Examination

- a. Application by the Trainee recommended by the Supervisor.
- b. Certificate by the Supervisor, countersigned by Dean PGMI that Trainee has regularly attended at least 75% of the basic science lectures, demonstration, tutorials, and practical or clinical work both in-patients and out-patients.

Part I Examination:

At the end of 1st Calendar Year, the Part-I examination will comprise of Basic Sciences Education papers relevant to the specialty of Pathology of only theory MCQ types as under:

Paper-1 Basic Science Education **100Marks**
MCQ's 100 Questions (One Best Type)

Paper-2 General Pathology & Parasitology **100 Marks**
MCQ's 100 Questions (One Best Type)

Total 200 Marks

Eligibility to appear in Part – II Examination

1. The Trainee has completed the prescribed period of training of the course.
2. The Trainee has passed the Intermediate Evaluation (Part-I Examination).
3. Certificate by the Supervisor that the Log Book of Trainee is complete in all aspects and is signed by the Co-Supervisor and the Supervisor. The original Log Book will be presented by the Trainee during Practical / Oral examination.
4. The application form for Part-II examination with recommendation of the Supervisor.

Part-II Examination

- a) There shall be a total of four written papers, one in each subject, There shall be ten Questions (Short essays) in each paper and shall carry maximum of 100 marks. The duration of each paper shall be three hours.
- b) The practical & oral examinations shall be conducted separately in each of the four subjects, and shall include the examination of pathological material followed by written report & Viva Voice. The Practical & Oral examination in each subject shall carry marks as under:

4. Out-line of the examination shall be as follows:-

Paper-I:-

Morbid Anatomy and Histopathology:

- a. One written Paper (Short Essay 10 Questions)
100 Marks

Practical & Oral Examination
100 Marks

Paper-II:-

Microbiology and Serology:

- a. One written Paper (Short Essay 10 Questions)
100 Marks

Practical & Oral Examination
100 Marks

Paper-III:-

Chemical Pathology:

- a. One written Paper (Short Essay 10 Questions)
100 Marks

Practical & Oral Examination 100 Marks

Paper-IV:-

Haematology including Blood Banking:

- a. One written Paper (Short Essay 10 Questions)

b. Practical & Oral Examination 100 Marks
= 100 Marks

Grand Total = 800 Marks

Passing Marks = 50%

Note :- Candidates who pass theory examination are allowed to appear in viva Voce / practical examination.

It is compulsory to pass all the component parts of the each subject separately. In case of failure to obtain 50% marks in any of components of examination candidate will have to appear in all components of examination again. In the remaining prescribed three attempts allowed.


Practical & Oral Examination:- (100 Marks for Each Section)

Practical 40 Marks.

Oral Viva Voce 50

Marks. Internal

Evaluation 10 Marks.



i	Morbid Anatomy and Histo-pathology
ii.	Microbiology and Serology
iii.	Chemical Pathology
iv.	Haematology including Blood Banking

The panel of examiner will be as follows:-

External Examiner

(To be selected by University of Balochistan from the list of three examiners available)

One

Internal Examiner

(From the faculty of BMC)

Two

LOG BOOK.

The trainees must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book should be part of the requirement to sit for DCP examination. Log book should include adequate number of diagnostic and therapeutic procedures, routine and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

Log Book will have 5% weightage in final examination.

Proposed Format of Log Book is as follows:

Trainee's Name: _____

Roll No. _____

The above mentioned procedures shall be entered in the log book as per format

PROCEDURES:-

- Stains, routine and special (Grams, ZN, Haematoxylin-Eosin,PAS,KOH preparation)
- Microscopic examination of fluids(urine, CSF, body fluid aspirates).
- Stool examination for parasites.
- Culture /sensitivity of clinical specimens on routine aerobic media and anaerobic cultures.
- TB culture on LJ media
- Fungal culture on Sabroud's media.
- CBC on automated heamatology analyzers and manually, DLC

- Blood smear reading for identifying atypical cells for referral to consultant haematologist.
- Manual conduction of PT/APTT and INR calculation
- ESR determination by Westergren method
- Routine chemistry tests as Renal function tests, Liver function tests, Blood sugar estimation, Uric acid estimation, Cardiac enzymes , Lipid profile, Calcium, Phosphate, LDH on semi automated and fully automated analyzers.
- Electrolyte analysis on Flame photometer and ion – selective electrode(ISE)
- Serology, Device tests

PROCEDURES PERFORMED

S #	Date	Name of Patient, Age, Sex & Admission No	Diagnosis	Procedure Performed	Supervisor's Signature

EMERGENCIES HANDLED

S #	Date	Name of Patient, Age, Sex & Admission No	Diagnoses	Procedure / Management	Supervisor's Signature

CASE PRESENTED

S #	Date	Name of Patient, Age, Sex & Admission No	Case Presented	Supervisor's Signature

SEMINAR / JOURNAL CLUB PRESENTATION

S #	Date	Topic	Supervisor's Signature

Evaluation Record

(Excellent, Good, Adequate, Inadequate, Poor)

At the end of the rotation, each faculty member will provide an evaluation of the clinical performance of the fellow.

S #	Date	Method of Evaluation (Oral, Practical, Theory)	Rating	Signature

- Log Book will be signed by the supervisor / Co-Supervisor regularly.
- Log Book completion is must before the Trainee Final examination forms are signed.
- Log Book should be used in Practical / Clinical Examination at viva voce table or at TOCS cabin.

LEAVE.

The Postgraduate Trainees will be entitled to avail the leave as per S&GAD and postgraduate studies schedule, after the recommendation of their supervisor and approval of the Registrar BUMHS, Quetta.

RECOMMENDED BOOKS.

Books of Microbiology

1. To play Wilson principle's of Bacteriology ,Virology Immunology.
2. Mackie & McCartney Medical Microbiology.
3. Jawetz- Microbiology review.
4. Monica Cheesbrough Medical Laboratory Manual vol I vol II
5. Dewis Dulbico Microbiology.
6. Zinser Microbiology.
7. Mohan CR Manuselis G.I Diagnostic Microbiology.

Journals of Microbiology

1. American Journal of Microbiology.
2. Journal of Bacteriology.
3. Lancet.
4. Journal of Infectious Diseases.

Books of Histopathology.

1. Robbins Pathological basis of disease. By Ramzi S. Cotran. Vamay Kumar. Stanley L.Robbins.
2. General Pathology. J.B. Walter, M.S.Israel.
3. Ackerman's surgical Pathology.
4. Colour Atlas : RC cruuan.

Journals of Histopathology.

1. American Journal of Surgical Pathology.
2. Archives of Pathology.
3. International Journal of cancer.

Books of Haematology:

1. Practica Haematology: Dacie, J.V
2. Clinical haematology : Wintrobe M. Atuthors Lee, Boogs, Bithe Athens.
3. Postgraduate haematology : A. v Hoffbrand.
4. Blood: Authors : James H Jandi.
5. Clininal haematology in Medical Practice D. Gruchy
6. Haematology : Atuhors Williams , Beutler, Beutler, Erslev, Liehman.
7. Hofbrande atlas of hematology

Journals of Heamatology.

1. American Journal of Hamotology.
2. British Journal of Haemotology.
3. Transfusion.

Books for Chemical Pathology.

1. Chemical Pathology by Zilva.
2. Chemical Pathology by Baron.
3. Chemical Pathology by Mobsy. 4. Chemical Pathology by Tayab
5. Chemical Pthololgy by Varly.
6. Chemcal Pathology by Teitz .

Journal of Chemical Pathology.

1. Journal of Endocrinology.
2. Journal of Biochemistry.
3. American Journal of Chemical Pathology.

TRAINING SITE

- Post Graduate Medical Institute Quetta.
- Bolan Medical Complex Hospital Quetta.
- Sandeman (Prov:) Teaching Hospital Quetta.
- Helper's Eye Hospital.
- Fathima Jinnah T.B & General Hospital Quetta.

FACULTY MEMBERS.

PROFESSOR.

- 1.Prof. Dr. Nadeem Samad Sheikh MBBS, M.Phil,DCP,FCPS(Hematology) FCPP.
- 2.Prof.Dr.Muhammad Anwar Buriro MBBS,M.Phil (Chemical Pathology)
- 3.Prof. Dr. Munir Ahmed Raisani MBBS,MPhil(Chemical Pathology)FPCC.
- 4.Prof.Dr.Muhammad Hanif Mengal MBBS, M.Phil (Hematology)
- 5.Prof.Dr.Sanaullah Gazozai MBBS,M.Phil,PhD (Histopathology)

ASSISTANT PROFESSORS.

1. Dr. Ashiq Hussain Shah MBBS, M.Phil (Microbiology)
2. Dr.Syed Muhammad Ishaq MBBS, M.Phil (Histopathology)

3.Dr.Saima Irum
MBBS,M.Phil(Hematology)

4. Dr. Shafi Muhammad Khosa. MBBS, DCP, M.Phil
(Hematology).

5.Dr.Shaista Gul MBBS,M.Phil
(Histopathology)
