Mansoura University
Faculty of Medicine
Clinical Pathology Department

LOG BOOK

For Postgraduate Students
Applying for Master Degree in Clinical Pathology

Updated Version

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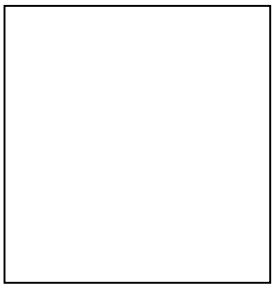
Personal Data



- Name:
- Telephone:
- E. mail address:
- Date of graduation:
- Degree:
- Date of registration:
- Date of Thesis approval:
- Starting Date:

Signature:

Head of the Department Vice Dean for research and postgraduate study

Policy of the log Book

Introduction:

According to the new postgraduate study regulation, postgraduate students applying for Master Degree in Clinical Pathology should fulfill a number of credit hours to be awarded. This is performed through attendance of scientific lectures, practical sessions as well as scientific activities including, thesis discussion, conferences and workshops in different specialties of Clinical Pathology. Attending at least 70% of different activities is a necessary requirement to get the permission to join the final degree exam.

Sections of the log book:

I- First part courses
II- Second part compulsory courses
III-Second part elective courses
IV- Scientific activities
V- Thesis
VI- Appendix

Assessment of the log book

Student's attendance and performance will be assessed by supervisors in different specialties of clinical pathology. Every activity or assessment should be documented by writing. The examination committee will revise the log book at the end of training before the final exam.

I-FIRST PART COURSE

Title of the course: Internal medicine related to laboratory medicine

Course code: CPATH 510 C

Credit hours: 5

Teaching hours: 75

Scientific Lectures

Date	Title	Supervisor's signature
	DM (acute complications & management)	
	Hyper & hypothyroidism	
	Hypercalcaemia	
	Cushing disease	
	Addison disease	
	Endocrinal emergencies	
	Heart failure	
	Infective endocarditis	
	Ischemic heart disease	
	Myocardial infarction	
	Upper GIT bleeding	
	Peptic ulcer (H. pylori)	
	Inflammatory bowel disease	
	Chronic hepatitis	
	Liver cell failure	
	Anemias (Iron deficiency & aplastic anemia)	
	Diagnostic approach to a case of anemia	
	D.D of cervical lymphadenopathy	
	Acquired coagulation disorder	
	Purpura	
	Acute & chronic renal failure	

	Protienuria	
	Diagnosis & treatment of: - ***Malaria*** - ***Typhoid***	
	How to reach diagnosis in a case of PUO	
	Anti-malarial drugs	
	Anti amoebic drugs	
	Schistosomiasis	
	B.A	
	Migraine	
	2ry myopathies	
	Peripheral neuropathy	
	Diagnostic criteria of SLE & treatment	
	Rheumatoid arthritis	
	TTT of acute attack of gout	
	Hypo & hyper natremia	
	Hypo & hyper kalemia	
	Metabolic acidosis	
	Metabolic alkalosis	

II-SECOND PART COMPULSORY COURSES

1-Hematology

Title of the course: Hematology

Course code: CPATH 530 HE

CPATH 530 HEP

Credit hours:

CPATH 530 HE: 6 hours

CPATH 530 HEP: 5 hours

Teaching hours:

CPATH 530 HE: 90 hours

CPATH 530 HEP: 150 hours

SCIENTIFIC LECTURES

Date	*Title*	*Supervisor's signature*
	Hemopoiesis:General considerations	
	Erythropoiesis	
	Microcytic hypochromic anemias:General aspects	
	Iron-deficiency anemia	
	Anemia of chronic disease	
	Sideroblastic anemia	
	The thalassemias	
	Iron overload	
	Megaloblastic anemia	
	General aspects of hemolytic anemias	
	Red cell membranopathies	
	Red cell enzymopathies	
	Hemoglobinopathies	
	Immune hemolytic anemias	
	Non-immune hemolytic anemias	
	Aplastic anemia and Pure red cell aplasia	
	Pancytopenia	
	Granulopoiesis	
	Benign disorders of granulocytes	
	Lymphopoiesis	
	Benign disorders of lymphocytes	
	Benign disorders of monocytes	
	The spleen	
	Acute lymphoblastic leukemia	
	Acute myeloid leukemia	
	Myelodysplasia	
	Chronic myeloid leukemia	
	Polycythemia	

	Myelofibrosis	
	Primary thrombocythemia	
	Chronic lymphocytic leukemias	
	Laboratory aspects of lymphoma	
	Multiple myeloma	
	Normal hemostasis	
	Thrombopoiesis	
	Vascular purpuras	
	Thrombocytopenia	
	Thrombocytosis	
	Hereditary qualitative platelet disorders	
	Acquired qualitative platelet disorders	
	Hemophilias	
	vonWillebrand's disease	
	Acquired coagulopathies	
	Hereditary thrombophilia	
	Acquired thrombophilia	
	Antithrombotic therapy	
	Red cell antigens and antibodies	
	Leukocytes and platelet antigen and antibodies	
	Donor selection and pretransfusion testing	
	Blood components therapy	
	Complications of blood transfusion	
	Autologous blood transfusion	
	Therapeutic apharesis	
	Hematologic aspects of systemic diseases	
	Hematology in pregnancy	

Practical Sessions

Skill	Level of performance			Trainee's assessment			Trainer's signature
	Observation	Assistance	Independence	Poor	Fair	Good	
Collection and handling of blood samples							
Tests for acute phase response ***ESR*** ***Plasma Viscosity*** ***Whole blood viscosity***							
Hemoglobinometry							
Manual red cell count reticulocyte count , hematocrit and calculation of red cell indices							
Manual platelet, total and differential count latelet count,							
Automated blood count							
Preparation and staining methods of blood and bone marrow films							
Blood cell morphology in health and disease							
Examination of blood films for parasites							
Bone marrow aspiration							
Bone marrow Trephine biopsy							
Laboratory assessment of iron status ***Estimation of serum iron*** ***Estimation of serum total iron-binding capacity*** ***Estimation of serum ferritin*** ***Estimation of serum transferrin, transferrin saturation and index and transferrin receptors*** ***Assay of serum hepcidin***							

Estimation of free erythrocyte protoporphyrin			
<u>Laboratory tests used in investigation of megaloblastic anemia</u> ***Measurement of serum and red cell folate and serum B12*** ***Measurement of intrinsic factor antibody*** ***Schilling test*** ***Measurement of serum gastrin*** ***Measurement of gastric juice PH*** ***Measurement of serum methylmalonic acid*** ***Measurement of serum homocysteine*** ***Measurement of serum transcobolamin*** ***Measurement of serum holotranscobolamin***			
<u>Generic laboratory tests used in the investigation of hemolytic anemias</u> ***Measurement of seum bilirubin, haptoglobin and hemopexin*** ***Measurement of plasma hemoglobin, methemalbumin, methemoglobin, sulphemogloin and carboxyhemoglobin*** ***Demonstration of urobilinogen, hemosiderin, myoglobin and porphobilinogen urine***			
<u>Investigations of hereditary hemolytic anemias</u> ***Erythrocyte membrane protein analysis***			

Osmotic fragility test ***Glycerol lysis-time, Cryohemolysis and autohemolysis tests*** ***Methemoglobin reduction and fluorescent screening tests for G6PD deficiency*** ***Quantitative G6PD assay*** ***Detection of heterozygotes for G6PD deficiency*** ***Pyrimidine-5-nucleotidase screening test*** ***Identification of G6PD variants*** ***Pyruvate kinase assay*** ***Estimation of reduced glutathione*** ***Glutathione stability test*** ***Measurement of red cell 2,3-diphosphoglycerate*** ***Determination of the oxygen dissociation curve***			
<u>Investigation of hemoglobinopathies</u> ***Detection of hemoglobin variants:*** ***Cellulose acetate electrophoresis at alkaline pH*** ***Citrate agar electrophoresis at pH 6*** ***Agarose gel electrophoresis*** ***Automated HPLC*** ***Isoelectric focusing*** ***Detection of unstable hemoglobins*** ***Detection of hemoglobin Ms*** ***Detection of altered affinity hemoglobins*** ***Sickling in whole blood*** ***HbS solubility test***			
<u>Investigation of thalassemia</u>			

Quantitation of Hb F ***Quantitation of Hb A2*** ***Assessment of the intracellular distribution of Hb F*** ***Fetal diagnosis of globin chain disorders***			
<u>Investigations of acquired hemolytic anemias</u> ***Antiglobulin (Coombs') test*** ***Acidified serum (Ham test)and*** ***Sucrose lysis tests***			
<u>Investigations of hemostasis</u> ***Measurement of prothrombin time*** ***Measurement of activated thromboplastin time*** ***Measurement of fibrinogen concentration (Clauss method)*** ***Estimation of bleeding time*** ***Clot solubility test for FXIII*** ***Detection of fibrin (ogen) split products and D-dimer*** ***Detection of circulating coagulation inhibitor*** ***Bioassays of coagulation factors*** ***Von Willebrand factor antigen assay*** ***Platelet aggregometry*** ***Detection of carriers of congenital coagulation deficiency defects***			
<u>Investigation of thrombotic tendency</u> ***Clotting assay for activated protein C resistance*** ***Detection of factor V Leiden and prothrombinG20210A***			

mutations			
Antithrombin, protein C and protein S assays			
Euglobuin lysis test			
tPA , PAI-1 and α 2-antiplasmin assays			
Markers of platelet and coagulation activation			
<u>Global tests of coagulation</u>			
Global protein C assay			
Thromboelastograph			
<u>Laboratory aspects of transfusion Medicine</u>			
Pre-transfusion compatibility systems			
ABO and D grouping			
Antibody screening			
Antibody identification			
Selection and transfusion of red cells			
Cross-matching			
Compatibility testing in special transfusion situations			
Investigation of a transfusion reaction			
<u>Erythrocyte cytochemistry</u>			
Staining of siderotic granules			
Demonstration of Heinz bodies			
Demonstration of Hb H inclusions			
Demonstration of cellular Hb F (Kleihauer test)			
<u>Leucocyte cytochemistry</u>			
Myeloperoxidase			
Sudan black B			
Neutrophil alkaline phosphatase			
Acid phosphatase reaction			
Periodic acid Schiff			
Naphthol AS-D chloracetate			

esterase ***α-naphthyl butyrate esterase*** ***α -naphthyl acetate esterase*** ***Toludine blue stain***			
<u>Immunophenotyping</u> **Flow cytometry** **Immuncytochemistry**			
<u>Diagnostic radioisotopes in hematology</u> ***Measurement of blood volume*** ***Splenic red cell volume*** ***Ferrokinetics*** ***Estimation of the life span of red cells in vivo*** ***Compatibility test*** ***Visualization of the spleen by scintillation*** ***Measurement of blood loss from GIT*** ***Measurement of platelet life span***			
Flow Cytometry analysis in hematology			
Cytogenetic analysis in hematology			
Molecular analysis in hematology			
<u>Interpretation of hematology laboratory data:</u> **Reference ranges and normal values** **Analysis of instrumental data output** **Case studies in hematology**			

2- Clinical Chemistry

Title of the course: Clinical Chemistry

Course code: CPATH 530 CC

CPATH 530 CCP

Credit hours:

CPATH 530 CC: 6 hours

CPATH 530 CCP: 5 hours

Teaching hours:

CPATH 530 CC: 90 hours

CPATH 530 CCP: 150 hours

N.B: In each subject detailed discussion of its basics will be followed by short hints in its updates in relation to clinical evaluation.

SCIENTIFIC LECTURES

Date	Title	Supervisor's signature
	Carbohydrate homeostasis	
	DM pathogenesis, C/P, complications & diagnosis.	
	Classification of lipids & lipid metabolism	
	Cardiovascular risk factors	
	Amino acids classification and Protein structure	
	Acute phase proteins	
	Inborn error of metabolism: - ***Inborn error of amino acids*** - ***Inborn error of fatty acids and organic acids metabolism.***	
	Physiology of normal renal functions, Glomeruler & tubular function tests	
	Chemical pathology of renal disorders	
	Water homeostasis & Electrolyte balance	
	Acid base balance disorders	
	Physiology of liver function & Liver function tests	
	Chemical pathology of hepatic disorders	
	Gastric function tests and gastric diseases	
	Exocrine pancreatic function tests, intestinal function tests & malabsorbtion syndromes	
	Cardiac function study	
	Diagnosis of ischemic heart diseases	
	Clinical enzymology I	
	Clinical enzymology II	
	Ca homeostasis & assay	
	Phosphorous & Mg disorders & assay	
	Vitamin assessment I	
	Vitamin assessment II	
	Trace element assessment ***Iron metabolism***	
	Nutrition and obesity	
	Biochemical Tumor markers I	
	Biochemical Tumor markers II	
	Hypothalamopituitary adrenal axis	
	Hypothalamopituitary thyroid axis	
	Pancreatic hormones	
	Reproductive related disorders	

	Therapeutic drug monitoring I	
	Therapeutic drug monitoring II	
	Updates in Clinical Chemistry - ***Genetic updates in clinical chemistry*** - ***Endothelial markers & oxidative stress*** - ***Metabolic updates in clinical chemistry*** - ***Newly advanced markers in disease management & prognosis.***	
	Clinical chemistry of pregnancy ***Fetal risk assessment***	
	Assessment of porphyrins and disorders of porphyrin metabolism.	
	Clinical chemistry of pediatric	
	Multiple endocrine neoplasm	
	Clinical chemistry of geriatric	
	Adipose tissue as an endocrine organ	
	General Principals of molecular biology techniques	
	Applications of molecular biology in clinical chemistry	

Practical Sessions

Skill	Level of performance			Trainee's assessment			Trainer's signature
	Observation	Assistance	Independence	Poor	Fair	Good	
Basic Lab skills • *Units.* • *Water.* • *Solutions preparation*							
Spectrometry							
Separation tech Chromatography Electrophoresis							
Osmometry							
Electrochemistry Potentiometry Amperometry							
POCT							
Q.C Charts Evaluations							
Reference values							
Immunoassays							
Carobhydrates • Glucose • Specimen • Andyticol method • Ref. Value • Oral glucose tolerance							
Glycated Hb • Specimen • Analytical method • Ref. Interval Clinical significance							
Lipogram • specimen • analytical methods • clinical significance • LDL calculation • Metabolic syndrome Risk assessment							
Protein • Plasma proteins and albumin • Specimen • Analytical methods							

• Clinical significance • Ref. *Values*			
Urinary protein • Specimen collection • Analytical methods • Clinical significance • Ref. interval ACR (Albumin / create ratio)			
Non Protein nitrogenous compound urea/ creatinine / uric acid. • clinical significance • analytical methods • critical values • specimen • Ref. interval			
Electrolytes • - N+, K+, Cl-, HCO3- • - Clinical significance • - Specimen • - Analytical method • - Ref. interval • - Critical values - Anion gap, osmal gap			
Blood gases • *Specimen* • *Clinical significance* • *Ref.& Critical Values*			
Bone minerals: Ca, ph, Mg++ • *Specimen* • *Clinical significance* • *Analytical methods* • *Ref & Critical value*			
Enzymes • *Liver Enzymes* • *(ALT. AST, ALP, s'nucleotide& GT)* • *Cardiac and skeletal ms (CK , LDH)* • *Pancreatic enzymes (amylase , lipase)* *Miscellaneous enzymes*			
Seminal fluid analysis • *CSF analysis* • *Physical* • *Chemical*			
Peritoneal, pleural, synovial fluid and pericar dial fluid analysis. • *Physical* • *Chemical* • *Microscopic* • *Specimen*			
Amniotic fluid testing: • *Cytogentic studies* • *Evaluation of fetal lung maturity* • *Tests for isoimmunization*			

3- Clinical Microbiology and Immunology

Title of the course: Clinical Microbiology and Immunology

Course code: CPATH 530 CMI

CPATH 530 CMIP

Credit hours:

CPATH 530 CMI: 5 hours

CPATH 530 CMIP: 4 hours

Teaching hours:

CPATH 530 CM: 75 hours

CPATH 530 CMP: 120 hours

SCIENTIFIC LECTURES (Clinical Microbiology)

Date	Title	Supervisor's signature
	1- Introduction to clinical microbioly	
	Cell structure, physiology, metabolism and genetics	
	Classification of microbes	
	Introduction to viral infections	
	Introduction to fungal infections	
	Bacterial flora	
	Performance improvement in the Microbiology laboratory	
	Health and safety in Microbiology laboratory	
	Antimicrobial drugs • ***Classification*** • ***Mechanism of action***	
	Molecular diagnosis	
	Immunodiagnosis of infective syndromes	
	Disinfection and sterilization	
	Automation : principles of instruments used in microbiology lab	
	2-Lab. Identification of significant isolates :-	
	Staphylococci.streptococci, enterococci and other catalase positive Gram positive cocci	
	Neisseria , Moraxella, Haemophilus and other fastidious Gram negative bacteria	
	Enterobacteracae	
	Vibrio , aeromonas, campylobacter and non fermentive Gram negative bacilli	
	Anaerobes	

	Chlamydia & Rickettsia	
	Mycoplasma and ureaplasma	
	3- Lab. diagnosis of infectious diseases :	
	Upper and lower respiratory tract infections	
	Skin and soft tissue infections	
	Anaerobic infections	
	GIT and food poisoning	
	Infection of central nervous system	
	Bacteraemia and septicaemia	
	Urinary tract infections	
	Genital infections and sexually transmitted diseases	
	• ***Infection in special population :*** ***- In transplant patients*** ***-In children*** ***-In HIV patients*** ***-Opportunistic infections***	
	Occular infections	
	Pyrexia of unknown origin	
	• ***Mycobacterial infection*** ***- Classification*** ***- Pathophysiology*** ***- Epidemiology*** ***- Multidrug resistance & its mechanism*** ***- Public health concern***	
	4-Clinical syndromes associated with viral infections	
	5- Fungal infections	
	Pathophysiology	
	Transmission	
	Clinical presentations	
	Epidemiology	
	Diagnosis (Superficial & deep) .	
	Infection control	
	Parasitic infections ***- Intestinal parasites*** ***- Tissue parasites*** ***- Blood parasites*** ***- Protozoa***	

Practical Sessions(Clinical Microbilogy)

Skill	Level of performance			Trainee's assessment			Trainer's signature
	Observation	Assistance	Independence	Poor	Fair	Good	
Specimen collection in the microbiology lab.							
Microscopes in microbiological diagnosis							
Media used for isolation of microorganisms							
Staining techniques and its interpretation							
Presumptive identification of bacterial growth :- • Colonial morphology • Biochemical identification(manual & automated) • Antimicrobial susceptibility tests • principle of (MICs, breakpoints, disc diffusion, agar dilution).							
Immunodiagnosis of infective syndromes							
Automation							
Application of Molecular methods in diagnostic microbiology • DNA & RNA extraction • Amplification • Detection (gel electrophoresis)							
Schematic outlines of microbiological diagnosis							
Examination of :- • Sputum • Throat & mouth specimens • Pus, ulcer material, skin specimens • Effusion • C.S.F • Urine • Stool • Urogenital sample & semen • Blood							
Sterilization method							

Anaerobic isolation & identification			
Water related dis. and testing of water supplies			
Virology • Specimen • Transport • Methods			
Mycology • Specimen • Direct examination • Culture • Interpretation of results			
TB • Staining methods of Acid fast bacilli • Interpretation of ZN stained smear • Decontamination procedures • Methods of Mycobacterial culture & identification			
Interpretation of microbiological results			
Atypical organisms • Leigonella			

SCIENTIFIC LECTURES (Clinical Immunology)

Date	Title	Supervisor's signature
	Introduction to Immune System	
	Immune response part I	
	Immune response part II	
	Innate Immunity Part I	
	Innate Immunity Part II	
	Antigen and Immunogene	
	T-lymphocytes & Tregs	
	B-lymphocytes	
	Immunoglobulin	
	Receptor Diversity	
	NK and KIR	
	Antigen-presenting cell , Ag processing and presentation	
	Complement system	
	Major histocompatibility complex	
	Histocompatibility testing	
	Cytokines	
	Chemokines	
	Tolerance & Autoimmunity	
	Evaluation of Immune-competence	
	Immunodeficiency syndromes Part I	
	Immunodeficiency syndromes Part II	

	Hypersensitivity	
	Immune-mediated Rheumatic diseases Part I	
	Immune-mediated Rheumatic diseases Part II	
	Immune-mediated GIT& Hepatobiliary diseases	
	Immune-mediated Endocrine dis.	
	Tumor Immunology	
	Transplant Immunology Part I	
	Transplant Immunology Part II	
	Stem cell transplant	
	Immunologic therapy	

Practical Sessions(Clinical Immunology)

Skill	Level of performance			Trainee's assessment			r's ure
	Observation	Assistance	Independence	Poor	Fair	Good	
Immunodiffusion methods							
Nephelometry							
Immunoelectrophoresis methods							
Enzyme immunoassay							
Immunoflourescence methods							
Agglutination assays							
Complement assays							
Lymphocyte separation							
Lymphocyte activation							
Flowcytometery principles and applications							
Lymphocyte assays							
Neutrophil function							
HLA-typing by serology							
HLA-typing by molecular techniques							
Cross match							
Cellular typing & PRA							
PCR principles and applications							
How to prepare solution for molecular biology							
Agarose gel elctrophoresis							
Instrument in clinical Immunology lab							

III-Second Part Elective Courses

1- Laboratory Safety

Title of the course: Laboratory Safety

Course code: CPATH 530 LS

Credit hours: 1

Teaching hours: 15

Scientific Lectures

Date	Title	Supervisor's signature
	General Safety Precautions	
	Safety guidelines and responsibility	
	Biologic safety	
	Chemical safety	
	Radiation safety	
	Fire safety	
	Electrical hazards	
	Compressed gas hazards	
	Cryogenic material hazards	
	Mechanical hazards	
	Chemical waste	
	Radioactive waste	
	Biohazardous waste	
	Accident documentation and investigation	

2- Immune-based Laboratory Techniques

Title of the course: Immune-based Laboratory Techniques

Course code: CPATH 530 IBLT

Credit hours: 1

Teaching hours: 15

Scientific Lectures

Date	Title	Supervisor's signature
	Antigen- antibody interactions	
	Immunodiffusion techniques	
	Labeled immunoassay techniques	
	Immunoelectrophoresis	
	Chemiluminescence and bioluminescence	
	Automated immunoassay	
	Transplantation immunology work up	
	Autoantibodies detection by IF techniques	
	Automated autoantibodies detection	
	Immunoglobulin and complement detection	
	Flow cytometry : basic principles	
	Flow cytometry : clinical applications	

IV-Scientific activities:

1- Thesis discussion attendance:

Date	Title of the thesis	Supervisor's signature

2- Conference attendance:

Date	Title of the conference	President' S signature

3-Workshop attendance:

Date	Workshop	Organizer's signature

V- Thesis

Credit hours: 6

Title of the thesis	Date of discussion	Principal supervisor's signature

VI-Appendix