Logbook of MS of medical Parasitology

Personal Data

Name: .....

Department : .....

Mobile Number:.....

E-mail Address: .....

Master Degree:

Date of registration: ...../...../.....

Signature:

Head of the Department

Vice Dean for research and postgraduate study

Aim of the Logbook:

To provide evidence that the candidate attained the desired level of competence required to gain the award. In this book, the candidate will document all academic and laboratory skills that will be attained during training.

Important regulations (for MS candidates):

-**To be legible for the first part MS exam** you have to attend at least 70% of the lectures of each course in the semester as evidenced by the logbook

-**To be legible for the (MCQ online) exam at the end of each of second part semesters** you have to attend at least 70% of the lectures of each course/module in the semester as evidenced by the logbook.

- **To be legible for the final MS exam:**

1- A time interval of 36 months must pass since the **day of registration to the job** for demonstrators and 30 months since the day **of degree registration** for non residents.

2- You have to spend **a year of daily** practical training in the department or **two years with three times/week** practical training.

3-You have to register 4 semesters on Ibn rhythm registration page.

4- You have to attend 70% of the lectures of each course in the second part of MS degree.

5- You have to fulfill and perform 70% of the practical skills documented in the logbook.

Contents

Section I:

Scientific Lectures

Name of the course: Medical microbiology & immunology (PAR507)

Compulsory **first part**

Credit hours: 4 h. **Semester: (spring/fall/summer) year.....**

(1) Program Aims:

The broad aim of the course is to:

a- Enable the student to understand the commonly known pathogenic organisms (Bacteria, Fungi, Viruses) through study the microbial characters.

b- Teach the student the basic elements of immune response.

c- Enable the student to know the advances in microbial genetics.

d- Enable the student to practice available techniques for diagnosis of microbial infections and immunological techniques.

(2) Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding: the course enables graduates to:

A1. Recognize the general Morphology and structure of bacteria, viruses and fungi.

A2. Recognize Bacterial physiology and growth.

A3. Recognize the host microbe relationship and microbial pathogenesis.

A4. Culture character, antigenic structure and virulence factors of microorganisms of medical importance.

A5. Describe general methods for identification of bacteria, viruses and fungi.

A6. Describe the most important methods of decontamination and principles of infection control.

A7. Explain innate immunity, complement.

A8. Discuss acquired immunity (humoral and cell mediated).

A9. Recognize the role of immune system in the patho-physiology of infectious and non- infectious diseases.

A10. Explain tumor immunology.

A11 Explain hypersensitivity, autoimmunity.

A12. Discuss transplantation immunology.

A13. Describe important antigen-antibody reactions.

A14. Explain Immunodeficiency.

A15. Recognize the microbial causes, laboratory diagnosis, treatment, prevention and control of common infections and diseases of medical importance.

A16. Explain microbial genetics, advance in the field and the impact of molecular technology in microbiology and immunology.

B- Intellectual skills

The Postgraduate Degree provides opportunities for candidates to achieve and demonstrate the following intellectual qualities:

B1. Interpret results of microbiological, serological and molecular tests.

B2. Formulate a systematic approach for laboratory diagnosis of common infectious clinical conditions.

B3. Select the most appropriate tool to the identification of the causative organism.

B4. Evaluate according to evidence the causal relationship of microbes and diseases.

C- Professional/practical skills

The Postgraduate Degree provides opportunities for candidates to demonstrate the following professional/practical skills:

C1. Identify medically important bacteria based on microscopic examination of stained preparations.

C2. Prepare a Gram and a Ziehl-Neelsen stained films and identify, according to morphology and characteristics, stained preparations.

C3. Conduct serological tests commonly used for bacterial identification and distinguish positive and negative results.

C4. Perform hand wash and identify different physical and chemical methods of sterilization.

D- Communication & Transferable skills

The Postgraduate Degree provides the opportunity to demonstrate the following transferable skills:

D1. Establish a concise scientific activity according to standard scientific thinking and integrity.

- Review literature on a research topic.

- Retrieve recent data from web sites

- Manage time efficiently.

D2. Work productively in a team.

- Communicate effectively and respectively with colleagues, supervisors and staff members

D3. Able to react positively with health care professionals, the national campaigns and health authorities which are conducted to infection control practice.

(I) Scientific lectures (45h.)

Subjects	Lectures/week (3 hours)
Medical Microbiology& Immunology	
1- General microbiology:	**5 hours**
-Introduction to microbial causes of human disease.	
-classification and pathogenicity of microbes	
2- Microbial genetics:	**5 hours**
-basic microbial genetics.	
-molecular techniques in diagnosis of microbial diseases.	
3- Immunology:	**10 hours**
-Basic immunology. Clinical immunology.	
4-Clinical bacteriology:	**20 hours**
-Arthropod-born diseases, Milk-born diseases	
- Water-born diseases, Urinary tract infection	
- Gastro-enteritis, -Food poisoning	
-Zoonotic diseases.	
-Nosocomial infection & infection control	
5- Virology: -General virology	**3 hours**
6- Mycology: General mycology	**2hours**

Date	Lecture title	Signature
	Introduction to microbial causes of human disease. classification and pathogenicity of microbes	
	Basic microbial genetics. Molecular techniques in diagnosis of microbial diseases.	
	Basic immunology. Clinical immunology	
	Arthropod-borne diseases Milk-borne diseases Water-borne diseases Urinary tract infection Gastro-enteritis Food poisoning Zoonotic diseases. Nosocomial infection & infection control	
	General virology	
	General mycology	

(II) Practical skills (30 hours)

Skill	Objective	Teaching hours
Examination of microscopic slides	Identification of medically important bacteria *Staphylococcus, Streptococci*,, gram-negative bacilli, *Candida albicans*	**7 hours**
Stained film preparation: 1- Gram stain. 2- Ziehl Nelseen stain.	Identification of organism according to morphology and characteristics of stained preparations.	**8hours**
Slide agglutination, tube agglutination, single radialimmunodiffusion, double diffusion (Elek's test), toxin-antitoxin neutralization	Interpretation of positive and negative results	**5hours**
Performance of possible methods of sterilization	Infection control	**5hours**
Case studies and microbiological test results	Analysis and commenting	**5hours**

Name of the procedure	Total number required	Observer	Assistant	Independent
Examination of microscopic slides to identify: *Staphylococcus, Streptococci*,, gram-negative bacilli, *Candida albicans*	**20 (5/each organism)**			
Stained film preparation: 1- Gram stain.	**5**			
Ziehl Nelseen stain.	**2**			
Slide agglutination, tube agglutination, single radialimmunodiffusion, double diffusion (Elek's test), toxin-antitoxin neutralization	**2** **2** **2** **2** **2**			
Sterilization methods (autoclave)	**2**			
Case studies and microbiologica results	**5 cases**			

Practical Procedures' log

Examination of microscopic slides to identify some microorganisms				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

15				
16				
17				
18				
19				
20				

Gram stain.				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				
3				
4				
5				

Ziehl Nelseen stain.				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**

1				
2				

Slide agglutination,

N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				

tube agglutination

N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				

single radialimmunodiffusion

N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				

double diffusion (Elek's test),				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				

toxin-antitoxin neutralization				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				

Sterilization methods (autoclave)				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				

Case studies and microbiological test results				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**

1				
2				
3				
4				
5				

Name of the course: Medical Biochemistry & Molecular Biology (PAR504)

Elective first part

Credit hours: 4 h. **Semester: (spring/fall/summer) year.....**

Program Aims:

Provide candidate with:

1- A basic knowledge of molecular biology and protein synthesis necessary for understanding sciences at molecular level.

2- Basic training on the principles of biochemistry and molecular biology techniques.

(1) Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

A1. Describe biochemical, clinical and laboratory importance and deficiency manifestations of minerals.

A2. Recognize enzyme nature, mechanism of action, specificity, classification, co enzymes,

A3. Describe enzyme units, enzyme kinetics, factors affecting rate of enzyme action, enzyme inhibition, regulation of enzyme activity, plasma enzymes.

A4. Describe structure of DNA, chromatin and chromosomes, mitochondrial DNA, and types of RNA.

A5. Explain DNA replication and repair.

A6. Discuss transcription (RNA synthesis), processing of RNA, and regulation of gene expression.

A7. Describe Protein synthesis (translation): synthesis of polypeptide chain post-translation processing.

A8. Identifies recombinant DNA bio-techniques.

A9. Explain different DNA amplification techniques and their applications.

A10. Principles of gene therapy.

A11. Point out pathological aspects of carbohydrates metabolism and their clinical importance.

A12. Explain metabolic disorders in diabetes mellitus.

A13. Describe the Biochemistry of insulin.

B- Intellectual skills: the course enables students to:

B1. Interpret results of urin analysis and molecular tests.

B2. Predict the clinical significances of some enzymatic reactions and kinetics.

B3. Predict the applications of molecular biology in basic and clinical sciences.

B4. Analyze clinical significance of determination of plasma levels of glucose and some enzymes.

C- Professional/practical skills:

By the end of the course, student should be able to:

C1 Identify the physical and chemical characters of normal urine.

- Perform chemical tests to detect abnormal constituents of urine.

C2. Estimate serum levels of glucose by colorimetric methods.

C3. Do extraction of deoxyribonucleic acid (DNA)

C4. Demonstrate Agarose gel electrophoresis for the extracted DNA.

D- Communication & Transferable skills

The Postgraduate Degree provides the opportunity to demonstrate the following transferable skills:

D1. Establish a concise scientific activity according to standard scientific thinking and integrity.

- Review literature on a research topic.

- Retrieve recent data from web sites

- Manage time efficiently.

D2. Work productively in a team.

- Communicate effectively and respectively with colleagues, supervisors and staff members

D3. Able to react positively with health care professionals, the national campaigns and health authorities which are conducted to infection control practice.

(I) Scientific lectures (45h)

Subjects	Lectures/week 3 hours
Minerals -Major elements (Ca-P-Mg-Na-K-Cl-S) -Trace elements (Fe-Cu, Zn-Mn-Co-Cr-I)	**10**
Enzymes -Nature, Classification -Kinetics, Regulation	**10**
Molecular Biology ***Nucleic acids** -Structure, Replication, Repair ***Protein synthesis** ***Molecular Biotechnology** -Gene therapy	**20**
Diabetes Mellitus	**5**

Date	Lecture title	Signature
	Major elements (Ca-P-Mg-Na-K-Cl-S) Trace elements (Fe-Cu, Zn-Mn-Co-Cr-I)	
	Enzymes -Nature, Classification -Kinetics, Regulation	
	Molecular Biology ***Nucleic acids** -Structure, Replication, Repair ***Protein synthesis** ***Molecular Biotechnology** -Gene therapy	
	Diabetes Mellitus	

(II)Practical skills (30 hours)

Skill	Objective	Teaching hours
DNA extraction	Application of diagnostic molecular methods	**5**
Agarose gel electrophoresis of extracted DNA	Application of diagnostic molecular methods	**10**
Colometric assessment of blood glucose	Diagnosis of Diabetes mellitus	**10**
Urine analysis	Detection of abnormal chemical constituents	**5**

Name of the procedure	Total number required	Observer	Assistant	Independent
DNA extraction	5			
Agarose gel electrophoresis of extracted DNA	5			
Colometric assessment of blood glucose	5			
Urine analysis	10			

DNA extraction				
N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				
3				
4				
5				

Agarose gel electrophoresis of extracted DNA				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				
3				
4				
5				

Colometric assessment of blood glucose				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				
3				
4				
5				

Urine analysis				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Name of the course: Clinical Pathology (PAR530)

Elective first part

Credit hours: 4h. **Semester: (spring/fall/summer) year.....**

The broad aims of the program are to provide the candidates with proper knowledge for hematology, clinical microbiology, immunology and clinical chemistry.

This program is designed to provide candidates with the following:

1. Knowledge about Hematology and hemoglobinopathies.
2. The general outlines of clinical microbiology.
3. Laboratory identification of microorganisms.
4. Ability to recognize the general outlines of clinical chemistry.

Intended Learning Outcomes (ILOs):

A Knowledge and Understanding: the course enables students to:

A1. Recognize the components of the immune system and its function:

-Role of complement in health and disease.

-Antigen processing.

-Ig: structure, function, timing and pattern of development after immunization and infection.

-Cytokines as mediators and markers of immune and inflammatory responses.

-T and B lymphocytes (development, activation, TCR & BCR diversity).

A2. Explain the Basic physiology of renal function and laboratory methods for assessment of renal function and proteinuria.

A3. Discuss the Dynamics of liver enzyme release, utility of meassuring hepatic enzymes.

A4. Recognize Assessment of liver function by non-enzyme analytes and understanding bilirubin metabolism.

A5. Recognize the components of CBC count, and understand the information provided by each.

A6. Recognize hemoglobinopathies affecting resistance or susceptibility to malaria.

A7. Discuss clinical indications for body fluid analysis and urinalysis.

A8. Explain manual hemocytometer cell counting.

A9. Identify blood and body fluid cell morphology.

A10. Recognize dynamics of bacterial growth.

A11. Discuss infectious disease serology.

A12. Recognize QC testing and proficiency testing needed for optimum identification of infectious agents in clinical specimens.

A13. Explain handling of infectious agents and chemichals recommended biosafety levels and disposal of hazardous waste.

A14. Describe infection control principles for prevention of nosocomial infections.

A15. Describe the mechanism of action of major classes of antimicrobial agents used to treat bacterial, viral, fungal and parasitic infections.

B- Intellectual skills

The Postgraduate Degree provides opportunities for candidates to achieve and demonstrate the following intellectual qualities:

B1. Interpret abnormal test result

Biochemical test

CBC

Urine chemistry result, and correlate them with clinical history.

B2. Formulate an approach for control of hospital acquired infections.

B3. Evaluate procedures of good quality sampling.

C- Professional/practical skills

The Postgraduate Degree provides opportunities for candidates to demonstrate the following professional/practical skills:

C1. Prepare a Gram and a Ziehl-Neelsen stained films and identify, according to morphology and characteristics, stained preparations.

C2. Conduct serological tests commonly used for bacterial identification and distinguish positive and negative results.

C3. Examine laboratory specimens (urine, sputum).

C4. Biochemical testing for blood glucose, liver and kidney function.

C5. Perform the technique of lymphocyte separation.

C6. Perform complete blood counting (CBC) and interpret results.

D- Communication & Transferable skills

The Postgraduate Degree provides the opportunity to demonstrate the following transferable skills:

D1. Establish a concise scientific activity according to standard scientific thinking and integrity.

- Review literature on a research topic.

- Retrieve recent data from web sites

- Manage time efficiently.

D2. Work productively in a team.

- Communicate effectively and respectively with colleagues, supervisors and staff members

D3. Able to react positively with health care professionals, the national campaigns and health authorities which are conducted to infection control practice.

(I) Scientific lectures(45h)

Subjects	Lectures (3 hours/week)
1-**Clinical Haematology** a) Hematology: CBC, hemoglobinopathies b) Body fluids c) Urinalysis	**10 hours**
2-**Clinical chemistry** a) Renal function assessment b) Liver function assessment	**7 hours**
3-Immunology a) Innate immunity, complement b) Ig –structure, function c) B-lymphocytes d) T-lymphocytes e) TCR&BCR diversity f) Toll like receptors g) MHC&antigen processing h) Detection of cytokines, CD4,CD8 cells i) Ag/Ab detection methods	**18 hours**

4-Clinical microbiology a) Good quality sampling b) Anti microbial therapy c) Hospital acquired infection & infection control guidelines	**10 hours**

Date	Lecture title	Signature
	Clinical Haematology Hematology: CBC, hemoglobinopathies Body fluids Urinalysis	
	Clinical chemistry Renal function assessment Liver function assessment	
	Immunology Innate immunity, complement Ig –structure, function B-lymphocytes T-lymphocytes TCR&BCR diversity Toll like receptors MHC&antigen processing Detection of cytokines, CD4,CD8 cells Ag/Ab detection methods	

	Clinical microbiology Good quality sampling Anti microbial therapy Hospital acquired infection & infection control guidelines	

(II) Practical skills (30 hours)

Skill	Objective	Teaching hours
kidney function tests as urea, creatinine	Assessment of renal function	**5 hours**
Liver enzyme testing ALT, AST	Assessment of liver function	**5 hours**
Glucose assay in blood	For control of diabetes	**2 hours**
Stained film preparation: 1- Gram stain. 2- Ziehl Nelseen stain.	Identification of acid fast organisms mainly Mycobacteria	**5 hours**
Lymphocyte separation	Technique steps	**5 hours**
Serology: ELISA, IHA	Serum testing for evidence of infection	**5 hours**
CBC	Blood cell disorders (anemia)	**3 hours**

Name of the procedure	Total number required	Observer	Assistant	Independent
kidney function tests as urea, creatinine	2 each			
Liver enzyme testing ALT, AST	2 each			
Glucose assay in blood	2			
Stained film preparation: 1- Gram stain.	2			
Ziehl Nelseen stain.	2			
Lymphocyte separation	2			
ELISA	2			
IHA	2			
CBC	4			

kidney function tests as urea				
N.	**Date**	**Examination findings**	**Level of participation**	**Signature of supervisor**
1				
2				

kidney function tests as creatinine			
Date	**Examination findings**	**Level of participation**	**Signature of supervisor**

Liver enzyme testing ALT			
Date	**Examination findings**	**Level of participation**	**Signature of supervisor**

Liver enzyme testing AST			
Date	**Examination findings**	**Level of participation**	**Signature of supervisor**

Glucose assay in blood

Date	Examination findings	Level of participation	Signature of supervisor

Stained film preparation:Gram stain.

Date	Examination findings	Level of participation	Signature of supervisor

Ziehl Nelseen stain.

Date	Examination findings	Level of participation	Signature of supervisor

Lymphocyte separation

N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				

ELISA

N.	Date	Examination findings	Level of participation	Signature of supervisor

1				
2				

IHA				
N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				

CBC				
N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				
3				
4				

Name of the course: Public health and Community medicine (PAR518)

Elective first part

Credit hours: 4 h. **Semester: (spring/fall/summer) year.....**

(1) Program Aims:

The aims of the program are to provide the candidates with:

1. Scientific knowledge essential for practice of Public Health and Community Medicine according to the international standards.

2. Skills necessary for preparing for proper diagnosis and management of community problems.

3. Skills for conducting and supervising researches on basic scientific methodology.

4. Maintenance of research interest and abilities.

(2) Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

A1. Define the sources of data and methods of collection for vital statistics and other demographic data.

A2. Describe sampling techniques and list advantages of sampling.

A3. Describe the study design, uses of different types.

A4. Recognize the etiology, pathogenesis, clinical features, diagnosis and complications of prevalent communicable diseases.

A5. Recognize communicable disease control and health promotion.

B- Intellectual skills

The Postgraduate Degree provides opportunities for candidates to:

B1. Design guidelines for a control program for a particular disease.

B2. Correlate the three interacting ecological factors—agent, host, and environment—affecting the occurrence of disease.

B3. Predict some of the medically important parasitic, bacterial, viral infectious diseases of public concern.

B4. Design different methods for prevention and control for each of these diseases.

B5. Propose principles of rodent and insect control in the community and hazards of rodent and insect.

B6. Analyze and evaluate information and data in the field of public health and community medicine and interpret data in accordance.

- Collect and verify data from different sources.

- Organize and manage data, including graphic and tabular presentations.

- Conduct health behavior theories to different community health problems.

- Assess risk in professional practices in the field of public health and community medicine.

- Plan to improve performance in the field of public health and community medicine.

-Identify different problems of the community and find solutions.

- Analyze researches and issues related to public health.

C- Professional/practical skills

The Postgraduate Degree provides opportunities for candidates to demonstrate the following professional skills:

C1. Comment on a research design.

C2. Choose the optimum type of study matching the nature of experiment.

C3. Data appropriateness.

C4. Interpretation of data, graphs and tables.

D- Communication & Transferable skills

The Postgraduate Degree provides the opportunity to demonstrate the following transferable skills:

D1. Establish a concise scientific activity according to standard scientific thinking and integrity.

- Review literature on a research topic.

- Retrieve recent data from web sites

- Manage time efficiently.

D2. Work productively in a team.

- Communicate effectively and respectively with colleagues, supervisors and staff members

D3. Able to react positively with health care professionals, the national campaigns and health authorities which are conducted to infection control practice.

(I) Scientific lectures

Subjects	Lectures/week 3 hours	Laboratory 2 hours
1-Research methodology • Basics of Study design • Cross sectional study and the prevalence rate • Cohort study, incidence rate, relative & • attributable risk • Case-control study, Odd's ratio • Sampling	**(12 hour)**	**8 hour**
2-Medical statistics: • Data collection methods • Types of Data • Tabulation of data • Graphical presentation of data • Central tendency • Normal distribution curves • Basics of Screening	**(14 hour)**	**10 hour**

3-Infectious diseases: • HBV, HCV, HAV • AIDS • Schistosmiasis, Malaria, Toxoplasma • Typhoid fever	**(16 hours)**	**8 hour**
4-Insect and rodent borne infections	**(4 hour)**	**4 hours**

Date	Lecture title	Signature
	1-Research methodology Basics of Study design Cross sectional study and the prevalence rate Cohort study, incidence rate, relative & attributable risk Case-control study, Odd's ratio Sampling	
	Medical statistics: Data collection methods Types of Data Tabulation of data Graphical presentation of data Central tendency Normal distribution curves Basics of Screening	

	3-Infectious diseases: HBV, HCV, HAV AIDS Schistosmiasis Malaria Toxoplasma Typhoid fever	
	4-Insect and rodent borne infections	

Name of the course: Immunology of parasitic diseases (PAR 508 IMP)

Elective **Second part**

Credit hours: 2 h. **Semester: (spring/fall/summer) year.....**

Course Aims::

This program is designed to provide candidates with the following:

1. Knowledge of the basic component of the immune system.
2. Information on general parasitic immunology, host–parasite relationship and parasite modulation of immune responses.

Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

A1. Recognize the components of the immune system and its function:
-Innate cells, T cell immune responses, T cell receptors, structure of immunoglobulin.
-Complement activation and effector functions.
-Antigen processing and presesntation, antigen recognition by MHC.

A2. Recognize regulatory immune responses induced to enhance or defeat parasitic infections.
-Treg, Breg cells: development, regulation, interactions.

A3. Identify Intracellular parasitism, immune evasion, host- pathogen interaction *in vivo*.

A4. Point out applications of parasitic therapy.

A5. Explain the role of apoptosis and autophagy in parasitic diseases.

B- Intellectual skills:

The Postgraduate Degree provides opportunities for candidates to achieve and demonstrate the following intellectual qualities:

B1. Evaluate according to evidence the causal relationship of parasites and diseases.

B2. Analyze basics of parasite immune evasion strategies and host manipulation.

B3. Interpret parasitic adaptation to host.

B4. Analyze rationale for helminth therapy.

Curriculum structure and content:

Subjects	Lectures (2/week)
I-Basic Immunology -Types of immunity -Immune cells -Immune responses	**6 hours**
II-Basic parasitic Immunology -Intracellular parasitism. - Parasitic antigen immune response -Regulatory B cells -Regulatory T cells -Parasite manipulation -Helminth therapy -Apoptosis and autophagy	**24 hours**

Date	Lecture title	Signature
	Basic Immunology -Types of immunity -Immune cells -Immune responses	
	Basic parasitic Immunology -Intracellular parasitism. - Parasitic antigen immune response -Regulatory B cells -Regulatory T cells -Parasite manipulation -Helminth therapy -Apoptosis and autophagy	

Name of the course: Laboratory Diagnostic Techniques (PAR 508 LAB)

Elective **Second part**

Credit hours: 2 h. **Semester: (spring/fall/summer) year.....**

(1) Program Aims:

-This program is designed to provide candidates with information about all techniques aiming to diagnose or treat parasitic diseases.

(2) Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding: candidate will be able to:

A1. Recognize principle, types and applications of ELISA.
A2. Identify monoclonal antibodies production, purification, diagnostic and therapeutic applications.
A3. Recognize protein electrophoresis principle, visualization and medical applications.
A4. Recognize flow cytometry data analysis, labels, measurable parameters and applications.
A5. Illustrate sample preparation, antigen-antibody interaction and diagnostic markers in immunohistochemistry.
A6. Define steps of gene cloning, uses and methods of gene sequencing.
A7. Recognize stem cells isolation, maintenance, potential uses in medicine.

B- Intellectual skills

The Postgraduate Degree provides opportunities for candidates to achieve and demonstrate the following intellectual qualities:

B1. Choose the suitable diagnostic techniques concerning the parasitic problem.

B2. Interpret laboratory findings to reach the proper diagnosis.

Curriculum structure and content:

Subjects	2 hours/week
1. Enzyme-linked immunosorbent assay (ELISA)	4
2. Gene cloning and sequencing	3
3. Development of monoclonal antibodies	3
4. Protein electrophoresis	4
5. Flow cytometry	4
6. Immunohistochemistry	4
7. Stem cells	4
8. Proteomic studies for potential novel vaccines and drug targets.	4

Date	Lecture	Signature
	Enzyme-linked immunosorbent assay (ELISA)	
	Gene cloning and sequencing	
	Development of monoclonal antibodies	
	Protein electrophoresis	

	Flow cytometry	
	Immunohistochemistry	
	Stem cells	
	Proteomic studies for potential novel vaccines and drug targets.	

Name of the course: Medical Parasitology (PAR508)

Compulsory **Second part**

Credit hours: 13 h. **Semester: (spring/fall/summer) year.....**

Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

a.1. Recognize the basic features of general bacteriology, virology and mycology.

a.2. Recognize the immune system and its protective functions.

a.3. Recognize the role of immune system in the patho-physiology of infectious and non- infectious diseases.

a.4. Recognize common infections and diseases of medical importance.

a.5. Discuss microbial genetics, advance in the field and the impact of molecular technology in microbiology and immunology.

a.6. Discuss biochemichal assesment of organ based pathophysiology.

a.7. Recognize established and recent information on blood cells.

a.8. Discuss utility of body fluid analysis and urinalysis.

a.9. Demonstrate knowledge of quality control**.**

a.10. Describe the mechanism of action of major classes of antimicrobial agents used to treat bacterial, viral, fungal and parasitic infections.

a.11. Gain knowledge about minerals and their role in body metabolism.

a.12. Recognize enzyme chemistry, action and regulation.

a.13. Describe the chemistry of nucleic acids.

a14. Identifies recombinant DNA bio-techniques.

a.15. Point out pathological aspects of carbohydrates metabolism and their clinical importance.

a.16. Recognize research methodology and data management.

a.17. Recognize the etiology, pathogenesis, clinical features, diagnosis and complications of prevalent communicable diseases.

a.18. Recognize regulatory immune responses induced to enhance or defeat parasitic infections.

a.19. Identify host-parasite interaction, how parasites harm their hosts.

a.20. Point out applications of parasitic therapy.

a.21. Recognize the role of apoptosis and autophagy in parasitic diseases.

a.22. Recognize techniques used to diagnose or treat parasitic diseases.

a.23. Describe the morphological characteristics of classes of parasites.

a.24. Recognize parasite geographical distribution and Parasite biology.

a.25. Illustrate management of diseases caused by parasites.

a.26. Explain host parasite interaction in opportunistic, nosocomial and zoonotic infections.

B- Intellectual skills

The Postgraduate Degree provides opportunities for candidates to achieve and demonstrate the following intellectual qualities:

b.1. Analyze clinical and investigational data to develop skill of logic reasoning for clinical problem solving.

b.2. Formulate a systematic approach for laboratory diagnosis of common infectious clinical conditions.

b.3. Select the most appropriate tool to the identification of the causative organism.

b.4. Evaluate according to evidence the causal relationship of microbes and diseases.

b.5. Formulate an approach for control of infectious diseases.

b.6. Evaluate procedures of good quality sampling.

b.7. Predict the clinical significances of some enzymatic reactions and kinetics.

b.8. Analyze the applications of molecular biology in basic and clinical sciences.

b.9. Predict clinical significance of determination of plasma levels of glucose and some enzymes.

b.10. Analyze and evaluate information and data in the field of public health and community medicine and interpret data in accordance.

b.11. Analyze basic parasite immune evasion strategies and host manipulation.
b.12. Interpret parasitic adaptation to host.
b.13. Analyze rationale for helminth therapy.

C- Professional/practical skills

The Postgraduate Degree provides opportunities for candidates to demonstrate the following professional/practical skills:

c.1. Identify medically important pathogen based on microscopic examination.

c.2. Prepare mounted slides and identify their content using a microscope.

c.3. Conduct serological tests and distinguish positive and negative results.

c.4. Implement quality assurance roles during examination of different samples.

c.5. Examine laboratory specimens (urine, sputum).

c.6. Biochemical testing for blood glucose, liver and kidney function.

c.7. Perform the technique of lymphocyte separation.

c.8. Perform complete blood counting (CBC) and interpret results.

c.9. Do extraction of deoxyribonucleic acid (DNA).

c.10 . Comment on a research design.

c.11. Report correctly on the results of different parasitological diagnostic methods.

D- Communication & Transferable skills

The Postgraduate Degree provides the opportunity to demonstrate the following transferable skills:

d.1. Establish a concise scientific activity according to standard scientific thinking and integrity.

d.2. Work productively in a team.

d.3. Able to react positively with health care professionals, the national campaigns and health authorities which are conducted to infection control practice.

a- Module 1:

Subjects	**Lectures** **7 hours/week**
Helminthology &Malacology	**Total: 105 hours**
Trematodes **Subclass Digenea** -Introduction &General morphology &F. Fasciolidae -F.Schistosomatidae -F. Heterophyidae &Opisthorchiidae -F.Echinostomatidae -F. Plagiorchiidae -F.Paramphistomatidae &Clinostomatoidea &Diplostomatidae. **-General Malacology** **-Host finding**	**25 hours**
Cestodes - Introduction &General morphology -SF. Bothriocephaloidea	**35 hours**

-F. Taeniidae F. Anoplocephalidae &Davaneidae&Linstowiidae &other non-human cestodes -F..Hymenolepididae&Dilepididae	
Nematodes - Introduction &General morphology -Order Enoplida -Order Oxyurida &Ascaridida -Order Rhabditida SF. Ancylostomatoidea&Strongyloidea -SF Trichostrongyloidea &Metastrongyloidea -SF. Dracunculoidea & Filarioidea -Suborder Spirurina -Larva migrans -Acanthocephala &leeches -Tongue worms	**45 hours**

b- Module 2:

Subjects	**Lectures** **6 hours/week**
Total: 90 hours	
Entomology -Introduction &General morphology -Pseudo-mosquito &Tabanidae -Flies &Myiasis -Fleas &lice -Bugs -Ticks -Mites. -Coleoptera -Hymenoptera -Lepidoptera -Scorpion & Spiders	**48 hours**

-Crustacea Control of arthropods	
Protozology -Introduction -Parasitic amoeba -Free living amoeba -Luminal flagellates -Hemosomatic flagellates -Toxoplasma -Intestinal coccidian (human & non-human) -Malaria -Babesia & other Apicomplexa -Ciliates -biology of protozoa	**36 hours**
Nosocomial &Zoonotic diseases	**6 hours**

Date	Title of the lecture	Lecturer's signature
	Trematoda Introduction &General morphology &F. Fasciolidae	
	-F.Schistosomatidae	
	F. Heterophyidae &Opisthorchiidae	
	F.Echinostomatidae	
	F. Plagiorchiidae	
	F.Paramphistomatidae &Clinostomatoidea &Diplostomatid	
	General Malacology	
	Host finding	
	Cestodes - Introduction &General morphology	
	SF. Bothriocephaloidea	

	F. Taeniidae	

Date	Title of the lecture	Lecturer's signature
	F. Anoplocephalidae &Davaneidae&Linstowiidae &other non-human cestodes	
	F..Hymenolepididae&Dilepididae	
	Nematodes - Introduction &General morphology	
	-Order Enoplida	
	Order Oxyurida &Ascaridida	
	Order Oxyurida &Ascaridida	
	Order Rhabditida	
	SF. Ancylostomatoidea&Strongyloidea	
	-SF Trichostrongyloidea &Metastrongyloidea	
	SF. Dracunculoidea & Filarioidea	

	-Suborder Spirurina	
Date	Title of the lecture	Lecturer's signature
	Larva migrans	
	-Acanthocephala &leeches	
	Tongue worms	
	Entomology -Introduction &General morphology	
	-Pseudo-mosquito &Tabanidae	
	-Flies &Myiasis	
	Fleas &lice	
	Bugs	
	-Ticks	
	Mites.	
	-Coleoptera	

	Hymenoptera	
Date	Title of the lecture	Lecturer's signature
	Lepidoptera	
	Scorpion & Spiders	
	Crustacea	
	Control of arthropods	
	ProtozologyIntroduction	
	Parasitic amoeba	
	Free living amoeba	
	Luminal flagellates	
	Hemosomatic flagellates	
	Toxoplasma	
	Intestinal coccidian (human & non-human)	
	Malaria	
	Babesia & other Apicomplexa	
	Ciliates	
	biology of protozoa	
	Nosocomial &Zoonotic diseases	

Section II:

Slides' box preparation

List of requirements

Slides' classification	Total number required (50)	No. of silides carried out	Supervisor's signature
Protozoa	**20**		
Helminths	**20**		
Arthropode	**10**		

Slides' log

Protozoa			
N.	**Parasite name**	**Date**	**Signature of supervisor**
1			
2			

3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

20			

Helminths

N.	Parasite name	date	Signature of supervisor
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

15			
16			
17			
18			
19			
20			

Arthropode

N.	Parasite name	date	Signature of supervisor
1			
2			
3			
4			
5			
6			
7			
8			
9			

10			

Section III:

Practical Procedures

List of requirements

Name of the procedure	Total number required	Observer	Assistant	Independent
Direct stool examination	20			
Concentration of stool by sedimentation / floatation	20			
Staining of stool	20			
Urine examination	10			
Blood films	20			

Practical Procedures' log

Direct stool examination				
N.	Date	Examination findings	Level of participation	Signature of supervisor
1				

2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

19				
20				

Concentration of stool by sedimentation / floatation

N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

14				
15				
16				
17				
18				
19				
20				

Staining of stool

N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				
3				
4				
5				
6				
7				

8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Urine examination

N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				

3				
4				
5				
6				
7				
8				
9				
10				

Blood films				
N.	Date	Examination findings	Level of participation	Signature of supervisor
1				
2				
3				
4				
5				
6				

7				
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10				
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17				
18				
19				
20				

Level of participation:

Observer

Assistant

Independent

Section IV:

Seminars

List of requirements:

1- Seminar attendance: 90% of seminars held during master years

2- Seminar performance: 4

1- Attendance

Topic	Date	Supervisor signature

2- Performance

Topic	Date	Supervisor signature

Section V:

Student teaching sections.

List of requirements: 60

Date	Section's subject	Supervisor sign.

Section VI:

Scientific activities

(Conferences/workshops)

List of requirements

Conferences			
Total number required	**Attendance**	**Organization**	**Presentation**
2	2	–	–
Workshops			
Total number required	**Attendance**	**Organization**	**Presentation**
1	1	–	–

Activity (Conference/Workshop	Role	Date	Supervisor's signature

Role:

-Attendant

-Organizer

-Presenter