Kingdom of Saudi Arabia
Ministry of Education
Umm Al-Qura University
Faculty of Applied Medical
Department of Clinical Laboratory Sciences

المملكة العربية السعودية
وزارة التعليم
جامعة أم القرى
كلية العلوم الطبية التطبيقية
قسم علوم المختبرات الإكلينيكية

Clinical Laboratory Sciences Internship Handbook

Intern Name	
University ID	
Training Year	
University e-mail	
Mobile Number	
National ID	
Training Hospital	

Contents

1 Clinical Laboratory Sciences Program

1.1 Vision, Mission, Goals, Objectives and Values of the Program

1.1.1 1.1.1. Vision:

To become a department committed for the development and excellence in medical laboratory sciences the fields of practice, research and ethical and values.

1.1.2 Mission:

To provide graduates with modern knowledge, skills, and professional behaviours needed to function effectively in a wide range of clinical laboratory settings.

1.1.3 Goals:

1. Develop a modern curriculum that provides junior graduates with up-to-date knowledge, technical skills, and clinical experience in clinical laboratory sciences.

2. Encourage leadership, self-learning, and problem-solving skills along with fostering ethical values, teamwork, and responsibility.

3. Provide students with necessary safety procedures and managerial skills related to clinical laboratory sciences.

4. Promote participation in basic and clinical research in the field of clinical laboratory sciences.

5. Foster responsibility and ethical values by encouraging students to participate in community services and voluntary work.

1.1.4 Objectives

Upon completion of Clinical Laboratory Sciences program our graduates are expected to:

1. Have in-depth knowledge of the relationships between laboratory data and pathologic processes, and how laboratory data relate to health and disease.

2. Have the talent to design, evaluate and implement new methods or protocols in different clinical laboratories.

3. Have experience with the performance and quality control of routine and specialized medical laboratory testing procedures and an understanding of the theoretical basis of these procedures.

4. Have experience troubleshooting and resolving typical problems in the clinical laboratory and are familiar with laboratory quality assurance, laboratory safety, laboratories regulations, information systems, management, research design and educational methodology.

5. Have the ability to work independently and as a team member to perform critical thinking and problem-solving skills in different diagnostic laboratory domains.

6. Have the capability to demonstrate an attitude of professionalism when working with colleagues with all other health professional staff working in the hospital.

1.1.5 Values

Laboratory medicine Program observes following values to foster integrity, commitment, teamwork, ethics, professionalism, responsibility, research, and volunteering service in Clinical Laboratory Sciences.

2 Internship Specifics

2.2. Introduction:

Internship is an integral part of the program in Laboratory medicine and is designed to provide interns with an opportunity to integrate and apply previously acquired knowledge and technical skills in actual clinical settings. Under the guidance of experienced Medical Laboratory Professionals and other qualified laboratory personnel and health professionals, interns learn more about diagnostic test procedures, quality control methods and programs, and instrumentation in the clinical laboratory. They also gain an understanding of the roles and functions of Medical Laboratory Professionals.

The internship provides applied learning experiences during which the intern should:

1. Practice and acquire clinical laboratory skills

2. Practice skills in problem-solving

3. Perform quality control procedures

4. Learn and adapt new procedures

5. Operate and maintain various laboratory machines and instruments

6. Understand the responsibilities, roles, and functions of the Clinical Laboratory Professionals

7. Report accurate and precise results to supervisors

8. Learn how to correlate tests results to patient clinical diagnosis

The internship program is conducted in the affiliated hospital laboratories of the program, where interns learn by participating in the workload of a supervising technologist/specialist/consultant. Emphasis in each internship discipline is given on: a) organization of work, b) use of automated instrumentation, c) the relation of laboratory results to patient diagnosis, and d) the establishment and use of programs for quality control and preventive maintenance of laboratory instruments.

I. Internship eligibility criteria:

Entry in internship is allowed only after successful completion of all prerequisite courses of Laboratory medicine program specified.

II. Internship duration:

The internship duration is one year (12 months, 52 weeks), including vacations and holidays. It is offered in the 5th academic year of the program and begins on the first Sunday of July.

III. Internship disciplines:

The internship program is spread over one year during which each intern takes training in various disciplines of Clinical Laboratory Sciences e.g., main specimen reception, phlebotomy, microbiology, parasitology, biochemistry, haematology and flowcytometry, blood bank, serology and immunology, histopathology and cytopathology and molecular diagnostics. The schedule of training for each discipline is given in forthcoming section. In major specialty, training period is of 12 weeks. The tasks (what intern may learn) for each discipline is listed in different sections. The intern will "perform and/or observe" the task, and therefore, should tick (√) the appropriate column for each task. Each task needs to be signed by the training supervisor. If any task is not applicable, then column should be marked "N/A" (not applicable).

IV. Internship rotations:

Rotations in the internship year depend on the program needs. Laboratory medicne program is multidisciplinary in training. Therefore, number of rotations varies depending on the availability of disciplines in a hospital. The intern of Clinical Laboratory Sciences can use more than one hospital or central laboratory to complete his/her internship in all required disciplines.

V. Interns' responsibilities:

Each intern should have two booklets; a) internship policy and general regulations booklet and b) program specific internship booklet that contains the tasks for each discipline. Each intern must go through both booklets thoroughly.

Internship policy and general regulations booklet has the details of general policy and rules and regulations of internship including vacations that all interns must follow.

In program specific booklet each intern must complete the tasks list on daily basis, which is to be signed by the immediate supervisor, if possible, on daily basis, otherwise on weekly basis. All tasks given in the internship booklet will be reviewed by the internship monitoring team on their periodic visits to training sites. Interns must know that filling the tasks list carries 5 marks. Any intern not filling tasks list of the disciplines in which they are trained will either lose these marks or get less marks if they have filled partially.

During internship period interns have to demonstrate following responsibilities:

1. All interns should complete the required vaccination document.
2. All interns will receive the Basic Infection control Skills License (BICSL) from the Faculty of Applied Medical Sciences.
3. If required, interns should obtain the Basic Life Support (BLS) certificate at the beginning of the internship. The Head of Hospital Affairs will guide in obtaining BLS certification.
4. All interns should follow the dress code specified by the training site.
5. Interns usually spend at least 8 hours daily, five days a week or follow the working hours of the training site where they are being trained.
6. Interns must avoid unsafe and unprofessional conduct.
7. Show professional behaviour and respect.
8. Perform assigned work with responsibility.
9. Follow hospital rules and regulations, including holidays.
10. Attempt to establish good working relationships with all personnel in the hospital.
11. Interns cannot change their hospitals after starting the internship, but this can be allowed (for detail, please refer to the hospital transfer section).

VI. Internship supervision and monitoring:

The supervision of interns is done at two levels; one by the hospital laboratory training coordinator and other by the program internship coordinator designated by the faculty for this purpose and report to Vice Dean for Academic Affairs. During training at hospital laboratory, intern is supervised on daily basis by the laboratory supervisor for particular rotation. The internship monitoring team visits training sites regularly to meet the interns and their supervisors to discuss their progress and addresses issues, if any. However, urgent issues can be reported to internship coordinator whenever is required. The monitoring team submits the report of each visit to program internship coordinator using a prescribed form (Form #5). A progress report of the internship is submitted by the program internship coordinator to faculty internship coordinator and then to Vice Dean for Academic Affairs on quarterly basis.

VII. Interns' Evaluation:

1. Evaluation of interns by Laboratory Supervisors:

Professional behaviour and technical performance are evaluated using an evaluation form designed to reflect intern's competencies that are expected to achieve on completion of their Laboratory Medicine internship. Evaluation by hospital laboratory supervisors has 80% weightage. This evaluation is organized into two parts: (1) general clinical competencies i.e., affective behaviour while at the rotation site and (2) discipline competencies i.e., ability to demonstrate basic theoretical and practical and technical ability in performing various clinical laboratory procedures. Both parts are rated on percent competency, including assessment of activities that are in the normal course of laboratory's daily routine and that they would normally attend or participate in seminars/ lectures, in-service workshops, etc.

At the end of each rotation intern will be evaluated by his/her immediate supervisor using an evaluation form (Form #1) provided by the Department Internship Coordinator. The supervisor will submit the evaluation form for each intern to the Laboratory Training Coordinator. A summary of internship evaluation (Form #2) will be prepared by the Laboratory Training Coordinator and at the end of internship period evaluation report of each intern will be submitted to Hospital Training and Education Office which will submit this report faculty internship coordinator then to Vice Dean for Academic Affairs of the Faculty.

2. Attending and participating in scientific events:

Intern will be evaluated for his/her professional development and continued medical education on the basis of his/her participation or attendance in faculty/university scientific conferences, seminars, symposia and workshops. Each intern must fill the details of his/her participation or attendance and attach copy of certificates when submitting the booklet at the end of internship. This section carries 10 marks. Failing to do so will lose these marks.

3. attendance leaves and vacations:

- The attendance is documented daily at training coordinator office depending on hospital regulation,
- Official duty hours of the lab.
- Trainees are allowed to take leaves according to their university plan following the link: https://uqu.edu.sa/fameds/App/Forms/Show/91211?ticket_cat_id=154953.
- All leaves must be formally requested using (Leave Request Form 6) and are approved directly by the supervisor then training coordinator.

4. <u>Commitment to fill tasks list in internship booklet:</u>

Intern's needs to fill the assigned tasks list for each discipline in which he/she is trained and signed by the training supervisor as shown in internship booklet. This section carries 5 marks. The program internship committee will check this and assign marks. Any intern not filling the tasks list completely will lose these marks or get less mark. Commitment to fill intern feedback form: Filling intern feedback form (Form #4) at the end of each discipline of the internship is necessary and carries 5 marks. Any intern not filling intern feedback form for the disciplines in which he/she is trained will either lose these marks or gets less mark if filled partially.

VIII. Evaluation of training rotations by interns:

Interns' evaluation of rotation sites is a part of our reciprocal evaluation procedure. Interns must fill intern feedback form (Form #4) at the end of each rotation which is placed immediately after the tasks list of each discipline. Interns must make sure that intern feedback form for all disciplines are filled in which they trained.

IX. Internship grading:

Grades for the Clinical Laboratory Sciences internship are calculated using Intern Evaluation Form (Form #1 and #2) and evaluation by program internship committee (Form#3). Percent/grades are determined based on the performance in each of the components. The final percentage out of 100 is worked out as follows: 80% weightage will be given to hospital laboratory evaluation and 20% weightage for program internship committee evaluation. The minimum of 60% is required for successful completion of internship. The percentage component of grades is then converted to letter grades. University grading system is used to determine the grade (please see the table below).

Percentage Obtained	Grade	Letter Grade
95 to 100	Exceptional	A+
90 to 94	Excellent	A
85 to 89	Superior	B+
80 to 84	Very Good	B
75 to 79	Above Average	C+
70 to 74	Good	C
65 to 69	High pass	D+
60 to 64	Pass	D
Less than 60	Fail	F

Note: All forms are available in the "Forms" section.

X. Award of internship certificate:

After successful completion of training, intern should submit the **"internship Handbook"** duly signed by the supervisors for each rotation to program internship coordinator. The intern will be granted a certificate by the Faculty after approval of Clinical laboratory sciences internship committee and Faculty internship committee. The certificate will provide the overall grade obtained by the intern in the training as well as the details of different disciplines and the % of the marks obtained in each discipline.

Note: Any intern who fails to submit internship booklet will not be awarded internship completion certificate.

3 Agreement Letter

Dear Intern,

Please read carefully Rules, Regulations and Guidelines stated for internship year. Sign the statement below to ensure that you understood all contents of internship and agree to adhere to the Rules, Regulations and Guidelines.

_____

I have read, understood, and agree to adhere to the Rules, Regulations and Guidelines stated in Clinical Laboratory Sciences Internship Handbook.

Intern Name: _____

University ID No: _____

Signature: _____

Proposed Training Schedule

Internship Discipline	Number of Weeks
Main specimen reception	**1-2**
Phlebotomy	**1-2**
Microbiology	**5-6**
Parasitology	**2-3**
Clinical Chemistry and Hormones	**5-6**
Haematology	**4-5**
Blood bank	**5-6**
Serology and Immunology	**3-4**
Histopathology and Cytopathology	**3-4**
Special technologies (Flowcytometry, cytogenetic, molecular techniques)	**1-3**
Major Specialty	**10-12**

Note: The total period of internship should NOT be less than 48 weeks

4 Internship Guidelines for Laboratory Disciplines

4.1 Main Specimen Reception

Name of Hospital: _____ Section: **Main specimen reception**

Intern Name: _____ University ID: _____

Rotation Period (from/to): _____

Goal:

Interns need to acquire knowledge and skills of proper handling anddocumentation of clinical specimens at reception during the internship period.

Objectives:

1. To know the guidelines and procedures of handling and documentation ofclinical specimens.
2. To apply specimen acceptance/rejection criteria.
3. To familiarize with computerized system of specimens' entry anddistribution to respective laboratories.
4. To categorize specimens according to their turn around time.

Tasks: The intern will observe and/or perform the following procedures. If anytask is not applicable, please mark "N/A".

Each task to be signed by the trainer during training of the trainee:

A: Documentation

	Task	Observe	Perform
1	Apply section safety policies and procedures		
2	Know the procedure of incident reporting of an incident		

B: Specimen Management

	Tasks	Observe	Perform
1	Categorize specimens according to their turn around time.		
2	Apply specimen acceptance/rejection criteria.		
3	Sorting out of specimens according to laboratory policies.		
4	Report specimen problem, if required.		

C. Miscellaneous:

	Tasks	Observe	Perform
1	Use appropriate label/barcode for specimen tubes and containers.		
2	Appropriate timing of specimens' delivery to departments.		
3	Learn proper communication with other departments in the hospital.		
4	Know the procedures of inventory, ordering and receiving supplies.		
5	Know the locations of equipment's and supplies in the unit.		
6	To know the sample send-out procedure		

Laboratory Training Coordinator:

Name: _____

Signature: _____**Date:** _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
		Performance Marks
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.2 Phlebotomy

Name of Hospital: _____ Lab Section: **Phlebotomy**

Intern Name: _____University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of proper phlebotomy techniques during the internship period.

Objectives:

1. To disinfect the blood collection site with appropriate disinfectant.
2. To know how to apply a tourniquet and for desirable time.
3. To detect the preferred venous access sites.
4. To insert the needle properly for blood withdrawal.
5. To take care of the patient to avoid complications during and after blood collection process.

Tasks: The intern will observe and/or perform the following procedures. If any task is not applicable, please mark "N/A".

Each task to be signed by the trainer during training of the trainee:

A. Preparation for blood specimen collection:

	Tasks	Observe	Perform
1	Ensure that the test request is ordered by the treating physician.		
2	Ensure proper patient identification and labeling of the tubes and review of request slip for the type of test requested.		
3	Pretest of blood withdrawal materials.		
4	Identification of additive, additive function, volume, and specimen considerations to be followed for each of the various color coded tubes.		
5	Register the specimens in the laboratory information system.		

B. Technique for blood specimen collection:

	Tasks	Observe	Perform
1	Proper application of tourniquet and knowledge of hazardous effects of prolonged tourniquet application upon laboratory value		
2	Detection of preferred venous site and the factors to consider in site selection.		
3	Disinfection of blood collection site and proper insertion of the needle for blood withdrawal (adult, pediatric and infant).		
4	Special precautions for blood withdrawal and inoculation into appropriate culture media for microbiological investigations.		
5	Post withdrawal procedures for specimen (transport, preservation, and storage).		
6	Post withdrawal observation and care of the patient.		

Laboratory Training Coordinator:

Name: _____

Signature: _____**Date:** _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.3 Clinical Chemistry and Hormones

Name of Hospital: _____ Lab Section: **Clinical Chemistry and Hormones**

Intern Name: _____ University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of clinical chemistry during internship period.

Objectives:

1. To learn different techniques in clinical chemistry.
2. To learn special techniques applied in clinical chemistry.
3. To interpret biochemical values for healthy and disease conditions.
4. To identify and practice calibration procedures and quality control for various tests and criteria for calibration acceptance or rejection.

Tasks: The intern will observe and/or perform the following procedures. If any task is not applicable, please mark "N/A".

Tasks	Observe	Perform
CLINICAL CHEMISTRY		
I. Specimen requirements:		
Identify specimen acceptance/rejection criteria.		
Identify specimen type (e.g., whole blood, serum, plasma, body fluids etc.),		
Review Specimen Collection Containers and Requirements		
Quantity required and pre-analytical preparation of sample.		
Test turnaround time.		
Apply proper storage of specimens for later testing.		
II. Instruments:		
1Name of the machine		
2 Principle		
3 Maintenance procedures (daily, weekly)		
4 Reagents & supply		
5 Calibration		
6 Running of QC and evaluate its acceptability.		
7 Running of the samples		
8Troubles shooting of instrument		

III. Interpretation of test results.		
Review result against reference ranges.		
Recognize panic values and immediately report these findings to the supervisor		
IV. Important biochemical profiles:		
Liver function tests (Markers).		
Renal function tests (Markers)		
Lipid profile		
Cardiac markers		
Diabetic profile		
Bone profile		
Pancreatic function		

Tasks	**Observe**	**Perform**
Hormones Area & TDM		
I. Specimen requirements:		
Identify specimen acceptance/rejection criteria.		
Identify specimen type		
Review Specimen Collection Containers and Requirements		
Quantity required and pre-analytical preparation of sample.		
Test turnaround time.		
Apply proper storage of specimens for later testing.		
II. instruments:		
1 Name of the machine		
2 Principle		
3 Maintenance procedures (daily, weekly)		
4 Reagents & supply		
5 Calibration		
6 Running of QC and evaluate its acceptability.		
7 Running of the samples		
8Troubles shooting of instrument		

III. Interpretation of test results:		
Review result against reference ranges.		
Recognize panic values and immediately report these findings to the supervisor		
IV. Quality Controls:		
1 Understand Westgard rules.		
2 Apply knowledge where controls needed for certain parameters.		
3 Corrective action for unacceptable quality control results.		
4 Apply knowledge when calibration is needed.		
5 Know the criteria of accepting or rejecting the calibration		

Laboratory Training Coordinator:

Name: _____

Signature: _____

Date: _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.4 Hematology

Name of Hospital: _____Lab Section: **Hematology**

Intern Name: _____ University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of standard hematological techniques during the internship period.

Objectives:

1. To perform routine hematological tests (i.e., CBC, differentials, ESR, coagulation profile, etc.).
2. To prepare and stain blood films with routine and special stains.
3. To exhibit knowledge of processing bone marrow specimens.
4. To perform or observe special techniques (e.g., Hb electrophoresis, HPLC, detection of malaria in blood film, sickle cell screening, spherocytosis screening etc.).
5. To prepare films from body fluids (CSF, peritoneal fluid etc.) and cell counting.
6. To apply knowledge of flow cytometry operation and sample preparation, if applicable.

Tasks: The intern will observe and/or perform the following procedures. If any task is not applicable, please mark "N/A".

A. Specimens Reception:

Tasks	Observe	Perform
1. Apply specimen acceptance/rejection criteria.		
2. Review specimen type, appropriateness of the quantity required.		
3. Register specimens		

B. CBC Bench:

Tasks	Observe	Perform
Automated cell counter		
• Name of the machine		
• Principle		
• Maintenance procedures (daily, weekly)		
• Reagents & supply		
• Calibration		
• Running of QC and evaluate its acceptability.		
• Evaluation of specimen suitability for testing (not clotted sample)		
• Running of the samples		
• Troubles shooting of instrument		

C. Coagulation Bench:

Tasks	Observe	Perform
• Name of the machine		
• Principle		
• Maintenance procedures (daily, weekly)		
• Reagents & supply		
• Calibration		
• Running of QC and evaluate its acceptability.		
• Evaluation of specimen suitability for testing (not clotted sample).		
• Running of the samples		
• Troubles shooting of instrument.		
• Special coagulation studies		

D. Manual techniques and procedures:

Task	Observe	Perform
I. Stanning preparation:		
• Preparation of proper blood smears with identification of causes of a bad smear.		
• Preparation of standard stains (Leishman Giemsa, etc).		
• Staining of peripheral blood smears with standard stains and identification of causes of bad staining.		
• Preparation of thin and thick smears for examination of malarial parasites.		
• Preparation and staining of films using supravital stain for		
• reticulocyte examination.		
II. Microscopic examination of blood film:		
• Identification of normal and abnormal RBC morphology.		
• Identification of different subsets of normal leukocytes.		
• Perform differential WBC count.		
• Estimation of platelet count from the film.		
III. Erythrocyte sedimentation rate (ESR):		
• Performing the test with normal and small sample size (e.g. from babies).		
• Read and report results.		
IV. Screening test of sickle cell anemia:		
• Performing all the steps of the test.		
• Reading and interpretation of results.		
V. Detection of malarial parasites in blood films:		
• Proper identification of different stages of malarial parasites.		
VI. Body fluids preparation:		
• Preparation of the cell for manual counting by hemocytometer.		
• Preparation of cell sediment without cell destruction.		

• Preparation and staining of smears from the sediment for morphological examination.		

E. Automated HPLC:

Tasks	Observe	Perform
• Regular maintenance procedures.		
• Start up the instrument.		
• Run daily controls and evaluate for acceptability.		
• Run Patient samples		
• Interpretation of the results from the curve and calculation of the percentage.		

F. Bone marrow bench:

	Tasks	Observe	Perform
1	Proper preparation of bone marrow smears.		
2	Preparation of smear from bone marrow clot.		
3	Special stain for bone marrow smears.		
4	Processing of specimens for flow cytometry and cytogenetic analysis (if applicable).		

Laboratory Training Coordinator:

Name: _____

Signature: _____

Date: _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.5 Serology and Immunology

Name of Hospital: _____Lab Section: **Serology and Immunology**

Intern Name: _____ University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills in serology and immunology for the diagnosis of various diseases.

Objectives:

1. To acquire knowledge in routine serological and immunological techniques.
2. To use different techniques and equipment available for performing routine tests.
3. To exhibit knowledge and importance of blood donors testing, if applicable.

Tasks: The intern will observe and/or perform the following procedures. If any task is not applicable, please mark "N/A".

A. Specimens reception:

Tasks	Observe	Perform
1. Apply specimen acceptance/rejection criteria.		
2. Review specimen type, appropriateness of the quantity required.		
3. Preparation of SEND OUT specimens		

B. Techniques and procedures:

Tasks	Observe	Perform
A- Serological tests		
1. Agglutination technique: (manual)		
Serial dilution of the test sample.		
Reagents preparation.		
Follow the standard procedures correctly.		
Identification of negative and positive samples.		
Calculation of titer for diluted sample.		
Knowing the clinically significant of each test.		
2. ELISA: (TORCH panel)		
Name of the machine		
Principle		
Maintenance procedures (daily, weekly, monthly) 4 Reagents & supply		
QC		

Running of the samples.		
The clinically significant of each test		
Interpretation of the result.		
3. Nephelometry:		
Name of the machine		
Principle		
Maintenance procedures (daily, weekly, monthly)		
Reagents & supply		
Running of QC and evaluate its acceptability.		
Running of the samples.		
The clinically significant of each test		
Normal rang		
Interpretation of the result.		
4.Chemiluminescence: (Architect)	Observe	Perform
Name of the machine		
Principle		
Maintenance procedures (daily, weekly) 4 Reagents & supply		
calibration		
Running of QC and evaluate its acceptability.		
Running of the samples.		
The clinical significant of each test		
Interpretation of result		
5. Blood donor testing :		
The 6 major tests included in the panel (HIV, HBV, HCV, HTLV, RPR, HBc, Total Ab)		
NAT test .		
Interpretation of these tests results.		
6. Autoimmune & Allergies:		
knowing the basic about auto immune & allergies.		

Laboratory Training Coordinator:

Name: _____

Signature: _____**Date:** _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.6 Microbiology

Name of Hospital: _____ Lab Section: **Microbiology**

Intern Name: _____University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of standard microbiological examinations during the internship period.

Objectives:

1. To select appropriate media for various clinical specimens.
2. To process specimens for isolation of pathogenic microorganisms.
3. To identify microorganisms encountered in the clinical laboratory.
4. To exhibit knowledge of environmental influences on microbial growth.
5. To differentiate between normal flora and pathogens.
6. To interpret antimicrobial sensitivity patterns.
7. To apply methods of sterile techniques in the laboratory at all times.

Tasks: The intern will observe and/or perform the following tasks. If any task is not applicable, please mark "N/A".

A. Specimens reception:

Tasks	Observed	Performed
Apply specimen acceptance/rejection criteria.		
Review specimen type, appropriateness of the container and quantity required.		
Preparation of SENDOUT specimens.		

B. Techniques and procedures:

Tasks	Observed	Performed
I Specimen inoculation and incubation:		
Specimen inoculation on appropriate laboratory media using standard streaking technique. Incubation of inoculated plates at appropriate temperature and atmospheric condition (aerobic, anaerobic, CO2).		
II Gram staining		
III Special colony characteristic:		
Examination of hemolysis on blood agar plate (alpha, beta, and gamma).		
Examination of swarming growth.		
Examination of pigment production.		
Differentiation between lactose and nonlactose fermenting colonies.		
IV Important biochemical tests:		

Catalase test *(to differentiate staphylococcus from streptococcus)*		
Coagulase tube test and staph latex kit *(to identify Staphylococcus aureus)*		
Spot oxidase test *(to help identify Neisseria, Pseudomonas and Vibrios)*		
Optochin disk *(to identify Streptococcus pneumoniae)*		
Novobiocin disk (to *differentiate S.epidermidis from S.saprophvticus)*		
Bacitracin disk *(to identify Group A Streptococci)*		

V . Bacterial identification: kits and automated systems		
Use of 0.5 McFarland standard		
Use of rapid identification kits: Analytical Profile Index (API) system e.g., API 20 E		
Use of automated system for bacterial identification e.g., Microscan, Vitek, Phoenix etc.		
VI. Antibiotic susceptibility test: disk diffusion and automated system		
Use of 0.5 McFarland standard.		
Use of Kirby Bauer disk diffusion method and recording and interpretation of susceptibility results.		
Use of automated system for antibiotic susceptibility e.g., Microscan, Vitek, Phoenix etc.		
E-test for detection of minimum inhibitory concentration (MIC).		
Detection of Extended spectrum b-lactamase (ESBL) producing organisms.		
Detection of Methicillin Resistant *Staphylococcus aureus* (MRSA).		

Special tasks for different benches:

Tasks	Observe	Perform
I Urine bench:		
Application of semi-quantitative colony counting techniques for significant bacteriuria.		
Calculation of number of organism in a sample for significant bacteriuria		
II Blood and other sterile body fluids bench:		

a. Blood: Placing blood culture bottles into blood culture system (e.g., BACTEC, BACTALERT) Processing of positive blood cultures on appropriate Culture		
b. Cerebrospinal fluid (CSF): Use of latex agglutination technique for CSF specimen to detect possible causative agent. Gram staining of centrifuged CSF specimen (from deposit) for the type of organism.		
c. Other body fluids (e.g., peritoneal (ascitic) fluid): Apply standard staining procedure (Gram stain and or AFB stain). Processing of specimens on appropriate culture media		

Tasks	**Observe**	**Perform**
III General microbiology bench (swabs):		
Inspection of request form for the type of specimen (Pus, wound, throat, ear, eye, nasal, high vaginal swab etc.) and type of test requested.		
Direct microscopic examination of Gram stained smears and recording type of bacteria and other pathological cells.		
Differentiate between normal flora and possible pathogens.		
Identification of suspected pathogen using available identification system.		
IV Respiratory bench (Sputum and Endotracheal tube secretions (ETT):		
Direct microscopic examination of Gram stained smears and recording type of bacteria and other pathological cells.		
Inoculation of specimen on appropriate laboratory culture media and incubation at suitable temperature for growth.		
Differentiate between upper respiratory tract normal flora and possible lower respiratory tract pathogens.		
Identification of suspected pathogen using available identification system.		
V Stool bench:		
Processing of specimen on appropriate selective media for isolation of *Salmonella* and *Shigella* species.		
Processing of specimen on appropriate media for isolation of *Vibrio cholerae.*		

VI Mycology bench:		
Recognition of colony characteristics for yeast on culture media.		
Gram's staining for yeast.		
Confirmation of *Candida albicans* by germ tube test.		
Confirmation of other *Candida species* by available biochemical tests.		
Direct microscopic examination of dermatological specimens by KOH method.		
Inoculation of dermatological specimens on appropriate culture media for isolation of molds/filamentous fungi.		
Examination of macroscopic features of molds/filamentous fungi		
Tease mount with lacto-phenol cotton blue for examination of microscopic characteristics of molds.		

Quality control:

Tasks	**Observe**	**Perform**
Quality control for growth of organisms on culture media using standard organism.		
Quality control of antibiotic disks by appropriate test.		
Quality control of staining reagents.		
Quality control of Viteck, Phoenix, Bactec..ect.		

Laboratory Training Coordinator:

Name: _____

Signature: _____

Date: _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.7 Parasitology

Name of Hospital: _____Lab Section: **Parasitology**

Intern Name: _____University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of parasitological examinations during the internship period.

Objectives:

1. To recognize appropriate specimens type, quantity and quality for requested tests.
2. To preserve and process specimens for requested tests.
3. To exhibit knowledge of different types of clinically significant parasites.
4. To identify different diagnostic stages of clinically significant parasites.

Tasks: The intern will observe and/or perform the following procedures. If any task is not applicable, please mark "N/A".

Tasks	Observe	Perform
I Stool specimen-:		
Macroscopic examination of stool: (Color, consistency, appearance, adult worms, segments of cestodes, etc.).		
Microscopic examination of stool: Direct saline and iodine smears.		
Sedimentation concentration technique and identification of diagnostic stages.		
Flotation concentration technique and identification of diagnostic stages		
Trichrome or other staining technique and identification of diagnostic stages		
Modified Kinyoun's or other acid fast staining technique and identification of diagnostic stages		
II Urine specimen:		
Macroscopic examination of urine specimen		
Microscopic examination		
Biochemical examination (using strips)		
Examination of urine sediment for parasites *(S. haematobium, T. vaginalis)*		
III Miscellaneous specimens and other specific tests:		
Occult blood test		
H.Pylori Ag in stool.		

Laboratory Training Coordinator:

Name: _____

Signature: _____

Date: _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.8 Blood bank

Name of Hospital: _____ Lab Section: **Blood Bank**

Intern Name: _____ University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of standard blood bank techniques during the internship period.

Objectives:

1. To develop technical accuracy and self-confidence by experiencing routine functions of Blood Bank.
2. To recognize and resolve discrepancies for blood grouping.
3. To exhibit knowledge of standard techniques used for ABO and Rh typing, compatibility testing, antibody identification, antigen typing, and preparation of blood components.
4. To acquaint with the procedures of donor selection and issuing of blood and blood products for transfusion.

Tasks: The intern will observe and/or perform the following procedures:

Donation:

Tasks	Observe	Perform
Donor selection		
Apply AABB donor requirement criteria		
Apply donor screening parameters (Wight, blood pressure, hemoglobin)		
Storage and retention of patient samples		
Blood donation		
Blood bag labeling		
Prepare the arm for phlebotomy and prepare venipuncture site		
Provide post donation guidelines.		
Recognize donor reactions.		
Blood component preparation		
Preparation of blood unit components including PRBC, Platelets, cryoprecipitate and FFP		
Storage of blood and Blood component		
Discarding of expired blood and infectious blood units.		

Transfusion Services:

Tasks	Observe	Perform
Samples and Requesting		
Apply specimen acceptance/ rejection criteria.		
Review specimen type, appropriateness of the quantity required.		
Storage and retention of patient samples		
Receiving of complete Blood &B1ood Components request and rejection of incomplete request		

Tasks	Observe	Perform
II. Donor testing:		
1-Cell suspension and Grading of Agglutination Preparation of red cell suspension Pipetting of red cell suspension for gel method Pipetting of plasma for gel method Reading and grading of agglutination reaction by gel method Reading and grading of agglutination reaction by tube method		
2-ABO and Rh Typing ABO and Rh typing by gel method / tube method ABO and Rh confirmation testing. Resolution of ABO grouping discrepancies Weak D typing by gel method/ tube method		
3-Antibody Detection and Identification Recognize and apply appropriate Antibody screening testes Antibody identification with basic panel and anttibody identification with enzyme panel		
4-DAT		
5-Crossmaching in routine and emergency situation		
6-Transfusion reaction handling		
III. Blood Components:		
Dispensing blood components		
Selection of component		
Selection of RBC for crossmatching		
Emergency transfusion		
Return of unused blood components		

Laboratory Training Coordinator:

Name: _____

Signature: _____**Date:** _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.9 Histophathology and Cytopthology

Name of Hospital:_____ Lab Section: **Histopathology and cytopathology**

Intern Name: _____ University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of histo-and cyto-pathologicalprocedures during the internship.

Objectives:

1. To recognize appropriateness of specimen type, size, and quality.
2. To preserve and handle specimens for the requested tests.
3. To exhibit knowledge of different stains and staining protocols includingimmuno-histo/cyto-chemical staining.

Tasks: The intern will observe and/or perform the following procedures. If anytask is not available, please mark “NA”.

Each task to be signed by the trainer during training of the trainee:

A. Specimens reception:

Tasks	Observe	Perform
Understand specimens' collection guidelines.		
Apply specimens' acceptance/rejection criteria.		
Review specimen type, size and appropriateness of the preservative and container for histopathology.		
Review specimen type, size and appropriateness of the preservative and container for cytopathology.		
Examine the labeling of the container and request slip for the type of test requested.		
Register specimens in laboratory information system or logbook.		
Ensure handling and preservation of specimens in histopathology laboratory.		
Ensure handling and preservation of specimens in cytopathology laboratory.		
Receiving and filing of paraffin blocks, slides' request and reports.		

B. Techniques and procedures:

Tasks	Observe	Perform
I Specimens handling and preparation: 1 Specimens handling protocols. 2 Grossing protocols. 3 Storage and disposal protocols for biological specimens and other materials. 4 Decalcification protocols. 5 Processing protocols. 6 Embedding protocols. 7 Preparation of smears for cytopathology. 8 Preparation of cell blocks for cytopathology 9 Use of automated systems for special procedures.		
II Microtomy: 1 Specimen's microtomy and related protocols. 2 Understands and applies standard specimen's processing protocols		

Tasks	Observe	Perform
III Chemical staining: 1 Routine staining protocols (e.g., Haemotoxylin and Eosin staining). 2 Special histochemical staining protocols (e.g., tumor markers). 3 Routine staining for cytopathology (pap smear). 4 Application of coverslip.		
IV Immuno-staining: 1 Antigen retrieval protocols. 2 Immuno-histochemistry techniques. 3 Immuno-fluorescence techniques.		

C. Quality control:

	Task	Observe	Perform
1	Participate in quality control procedures to prevent contamination.		
2	Quality control of solutions, reagents and other materials.		
3	Quality control for different techniques.		
4	Quality control of instruments (microscopes, microtomes, freezers, refrigerators, incubators, autoclave, etc.)		
5	Quality control of biological materials.		

Laboratory Training Coordinator:

Name: _____

Signature: _____

Date: _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.10 Molecular Diagnostics

Name of Hospital: _____Lab Section: **Molecular diagnostics**

Intern Name: _____University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire standard practical skills in molecular diagnostics.

Objectives:

1. To identify types of specimens received for molecular diagnosis.
2. To understand the importance of contamination hazard in molecular diagnosis.
3. To perform the required tests in an appropriate way.
4. To know the significance of accuracy in molecular testing procedures.
5. To understand the appropriate interpretation of molecular results.

Tasks: The intern will observe and/or perform the following procedures. If any task is not applicable, please mark "N/A".

A. Specimens reception:

	Task	Observe	Perform
1	Apply specimen'sacceptance/rejection criteria.		
2	Know the requirements to notify appropriate personnel about order or specimen problem.		
3	Use required documentation for order or specimen problems.		
4	Know the specimen separation, storage, retention and discard procedure.		
5	Preparation of (SEND-OUT) specimens.		

B. Techniques and procedures:

	Task	**Observe**	**Perform**
1	Orientation about preventive measures in molecular laboratory.		
2	Extraction of nucleic acid from different specimens using appropriate methods (manual and automated).		
3	Quantification of extracted nucleic acid (DNA/RNA).		
4	Setting up PCR.		
5	Setting up of instruments (e.g., thermocycler).		
6	Detection of suspected amplicons using appropriate methods.		
7	Interpretation of obtained results.		

C. Quality control:

	Task	Observe	Perform
1	Participate in quality control procedures to prevent contamination.		
2	Quality control of solutions, reagents and other materials.		
3	Quality control for different techniques.		
4	Quality control of instruments (microscopes, microtomes, freezers, refrigerators, incubators, autoclave, etc.)		
5	Quality control of biological materials.		

Laboratory Training Coordinator:

Name: _____

Signature: _____

Date: _____

Trainee Evaluation by supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

4.11 Flow cytometry:

Name of Hospital: _____Lab Section: Flow cytometery

Intern Name: _____ University ID: _____

Rotation Period (from/to): _____

Goal: Interns need to acquire practical skills of standard flow cytometery techniques of hematological samples during the internship period.

Objectives:

1. To apply knowledge of flow cytometry operation
2. Maintenance procedures (daily, weekly, monthly) and Calibration.
3. To prepare samples running in flow cytometery either (Bone marrow , perpherial blood, CSF , lymph nodes).
4. Data anaylsis after performing staining of immunophenotype of patient samples

Tasks: The intern will observe and/or perform the following procedures. If any task is not applicable, please mark "N/A".

A. Technique and preparation :

	Task	Observe	Perform
1	Regular maintenance procedures.		
2	Sample preparation for surface staining.		
3	Sample preparation for cytoplasmic staining.		
4	Start up the instrument.		
5	Follow laid down instructions.		
6	Run daily calibration beads and evaluate for acceptability.		
7	Sample acquisition.		
8	Cell gating and interpretation of the results.		

B. Quilty control:

	Task	Observe	Perform
1	Participate in quality control procedures to prevent contamination.		
2	Quality control of solutions, reagents and other materials.		
3	Quality control for different techniques.		
4	Quality control of instruments.		

Laboratory Training Coordinator:

Name: _____

Signature: _____

Date: _____

Trainee Evaluation by Supervisor

Rotation Period	From:	To:
	Performance Marks	
Attendance	10	
Behaviour	10	
Work as a team member	10	
Punctuality and initiative for work.	10	
Adhere to safety rules.	10	
Completion of assigned work.	10	
Proper use of instruments.	10	
Analytical skills.	10	
Result interpretation.	10	
Comply with quality control measurement.	10	
Total %	100%	
If the performance was <60%, what recommendations would you like to make?		
Repeat the training for the whole rotation period		
Repeat _____ tasks for _____ weeks.		
Supervisor signature		
Training Coordinator signature		
Comment:		

5 Forms

Form (1)	**EVALUATION OF INTERN BY CLINICAL LABORATORY (SUPERVISOR FORM- CONFIDENTIAL)**	
From (2)	**EVALUATION OF INTERN BY CLINICAL LABORATORY (SUPERVISOR FORM- CONFIDENTIAL)**	
Form (3)	**EVALUATION OF INTERN BY PROGRAM INTERNSHIP COMMITTEE (CONFIDENTIAL)**	
Form (4)	**INTERN FEEDBACK OF INTERNSHIP (INTERN FORM)**	
Form (5)	**INTERNSHIP MONITORING REPORT**	
Form (6)	**INTERNSHIP TRAINEE LEAVE -REQUEST FORM**	
	Internship Trainee Incident Report Form	
	Internship Policy and General Regulations	

6 Contacts

HEAD OF THE INTERNSHIP AND HOSPITAL AFFAIRS COMMITTEE:

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