



MASTER OF PATHOLOGY (HAEMATOLOGY)

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TRAINING CURRICULUM FOR TRAINEES AND
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MASTER OF PATHOLOGY (HAEMATOLOGY)

1 AIM

A four-year post-graduate training program in Haematology.

2 BACKGROUND

The MPath (Haematology) of the MOHE pathway is a postgraduate programme, which involves supervised competency-based training in diagnostic Haematology for a duration of a minimum of FOUR (4) years and a maximum of SEVEN (7) years. It is a clinical coursework programme in which the research component comprises less than 30% of the whole programme of study. The rest of this document will focus on the 4-year training programme leading to the MPath (Haematology) of the MOHE pathway.

3 STRUCTURE OF COURSE

The training is divided into 2-stages with total of 4 years duration.

Stage 1 is ONE (1) year in duration. In summary, the trainee will start by attending an Orientation programme, and during Stage 1, one-month Foundation posting rotations to each of the other major specialties of Pathology, namely: Anatomic Pathology, Medical Microbiology and Chemical Pathology, to familiarise themselves with the workings of these other Pathology specialties. The trainee will undergo supervised competency-based training in Haematology for the remainder of Stage 1. At the end of Stage 1, the trainee who has satisfactorily completed training will sit for an examination in Haematology (Part 1 Examination).

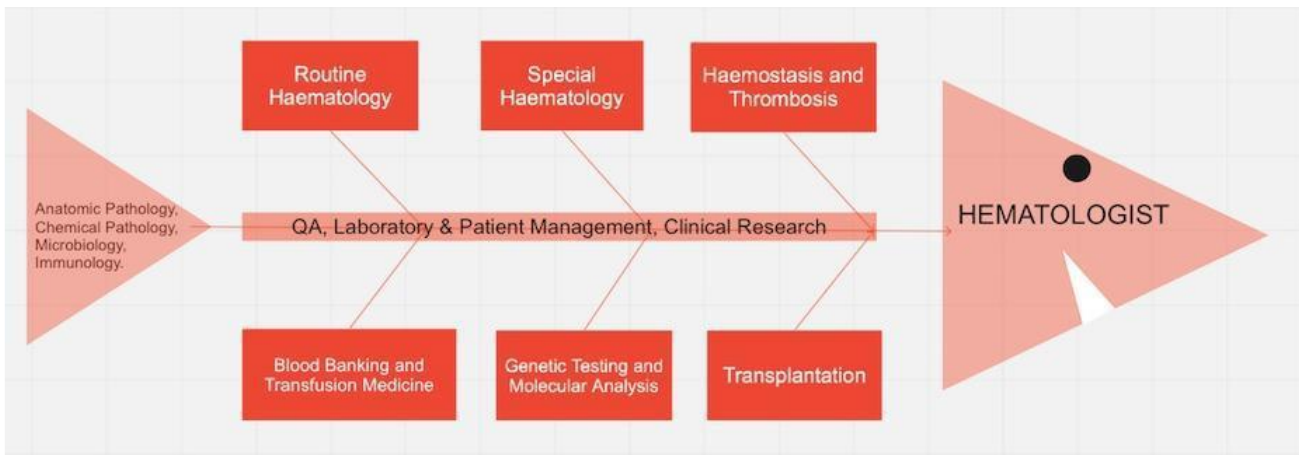
Stage 2 is THREE (3) years in duration during which the trainee will undergo supervised competency-based training in Haematology with the aim of progression to Level 5 competence. Some subspecialty areas will be introduced at this stage such as adult and paediatric haematology, transfusion medicine, haemopoietic stem cell transplant, molecular genetics, advanced haemostasis and immunology. Competency based training is supplemented by lectures, seminars, conferences and discussions. Trainees are expected to read widely, not only the literature of Haematology itself but also related subjects such as biochemistry, genetics, molecular biology and statistics. All trainees are also required to attend intensive as well as other relevant courses and continuous professional development activities.

In Stage 2, the trainee will also be introduced to research methodology, data analysis and writing a research report/dissertation. With the guidance of the supervisors (academic/ clinical/ research), the trainee will plan and undertake a research project and write up a research report/dissertation. To facilitate understanding of research methodology, all training universities will conduct a research methodology course and all trainees are required to attend the course.

After satisfactory completion of training in Stage 2, the trainee sits the Final (exit) examination.

The MPath curriculum currently provides training that is recognised towards the degree, Master of Pathology (Haematology) and is accepted by the Royal College of Pathologists of Australasia as giving exemption from the Basic Pathological Science paper and Part 1 FRCPA examination.

The Haematology Training Diagram, depicting the interaction of various components in the training of a Haematologist



The MPath curriculum conforms with the following Education and Learning outcomes:

Programme Educational Objectives (PEO)

Programme Educational Objectives are broad statements that describe the career and professional accomplishments that the programme is preparing the graduates to achieve:

PEO 1	Deliver effective, person-centred and value-based care by applying evidence informed medical knowledge and clinical skills to problem solve, manage and coordinate care.
PEO 2	Demonstrate ethical conduct, professionalism, and commitment towards personal development and lifelong learning.
PEO 3	Be leaders in the field and contribute to education, research and the promotion and improvement of health in the local, national and international setting.

Programme Learning Outcomes (PLO)

Postgraduate medical training programme must be accredited by the Malaysian Qualifications Agency (MQA) through the implementation of the Malaysian Qualifications Framework (MQF). The MQF sets the levels of learning and five clusters of learning outcomes to be achieved. The Programme Learning Outcomes (PLO) for postgraduate medical training in Haematology

PLO 1	<p>Demonstrate a comprehensive and systematic approach to solve complex and current healthcare issues using medical knowledge, concepts and principles to provide safe, effective and evidence-based patient care.</p> <p>Corresponds to MQF Cluster 1: Knowledge and Understanding</p>
PLO 2	<p>Contribute substantially to the area of specialisation through the creation of new knowledge/ theories/ solutions/ practice through originality and independent research, which satisfies peer reviews and international standards.</p> <p>Corresponds to MQF Cluster 2: Cognitive skills</p>
PLO 3	<p>Demonstrate competency in practical and technical skills in relevant areas of specialisation and continually develop new skills and techniques to resolve emerging problems in Haematology.</p> <p>Corresponds to MQF Cluster 3: Functional work skills – Practical skills</p>
PLO 4	<p>Communicate effectively, ethically and professionally with all stakeholders including patients, peers, members of the care team and the community at large in Haematology.</p> <p>Corresponds to MQF Cluster 3: Functional work skills - Interpersonal and Communication skills</p>
PLO 5	<p>Apply existing technological tools effectively to enhance patient care and undertake research to improve practise.</p> <p>Corresponds to MQF Cluster 3: Functional work skills – Digital and Numeracy skills</p>

PLO 6	<p>Demonstrate leadership, autonomy and advocacy in contributing to decision making practices for patient management, training, research and health systems improvement in Haematology.</p> <p>Corresponds to MQF Cluster 3: Functional work skills – Leadership, Autonomy and Responsibility skills</p>
PLO 7	<p>Continually integrate new knowledge in the area of specialisation for personal advancement and lifelong learning through ongoing academic and/or professional development.</p> <p>Corresponds to MQF Cluster 4: Personal and Entrepreneurial skills</p>
PLO 8	<p>Demonstrate commitment to professional values, attitudes and ethical conduct in patient management and research in Haematology.</p> <p>Corresponds to MQF Cluster 5: Ethics and Professionalism</p>

Competence Progression

The syllabus is designed such that the trainee undergoes a spiral progression of competence achievement in Haematology and is expected to progressively acquire a range of knowledge, skills and values during the 4-year period of training. The competence level is listed below and reflects a combination of knowledge and skills achievements appropriate to the stage of study. This progression starts at Level 1 to Level 5 when the trainee who has satisfactorily completed training is ready to present themselves for the Final (exit) examination.

The competence levels are shown below. These reflect the achievement of a combination of knowledge and skills. At each level, knowledge would precede and usually exceed skills but should always be appropriate and adequate to support skills competence.

Level	Description
1	Observer status only
2	Assistant status
3	Able to perform under close and direct supervision
4	Able to perform under indirect supervision
5	Able to perform unsupervised

The syllabus supports a progressive (spiral) accumulation of knowledge and skills by the trainee through the FOUR (4) years of the programmes. The knowledge and skills syllabi will support the development of the trainee in the various modalities of Haematology and transfusion medicine throughout the training programme.

Knowledge and Skills Syllabi in Haematology

YEAR OF PROGRAMME	Year 1	Year 2	Year 3	Year 4
TARGET COMPETENCE LEVEL	1 - 2	2 - 3	3 - 4	4 - 5
Content	KNOWLEDGE			
Red cell disorders: <ul style="list-style-type: none"> Anaemias – nutritional, haemolytic, bone marrow failure Thalassaemia and haemoglobinopathies 	Gain knowledge of the aetiology, basic classification, classical presentation, basic investigations, and salient diagnostic features of these haematological disorders.	Gain knowledge of the subtype classification and ancillary investigations of these haematological disorders.	Gain knowledge of additional haematological parameters that are relevant to clinical outcome (e.g., concomitant disease, grading, staging and prognostic factors)	Apply the knowledge of more complex haematological and related disorders relate them to diagnostic and management decisions.
White cell disorders: <ul style="list-style-type: none"> Benign disorders Acute leukaemia and chronic leukaemias Multiple myeloma Myelodysplastic syndromes Bone marrow failure 	Able to access reference texts, atlases and online resources to read about the salient features of these conditions.	Apply the knowledge of these haematological and related disorders for interpretation and diagnosis. Able to access journal articles to read about these conditions.	Apply the knowledge of more complex haematological and related disorders for interpretation and diagnosis. Able to lead, communicate and discuss among trainees.	Able to provide consultation to clinical colleagues.
Haemostatic disorders: <ul style="list-style-type: none"> Vascular and platelet abnormalities Bleeding and thrombotic disorders 				
Specialised haematology <ul style="list-style-type: none"> Haematological changes in systemic diseases (renal, liver, thyroid, connective tissue, malignancy, and chronic infection) Paediatric haematological disorders (TAM, HDN, MDS, inherited BM failure) Special haemostasis (thrombophilia, inhibitors) Genetic aspect of haematological disease 	Gain knowledges of the common diseases of this specialised haematology area.	Apply the knowledge for the interpretation of haematological tests related to these conditions under direct supervision.	Gain knowledge of additional haematological parameters that are relevant to clinical outcome of these conditions. Able to lead, communicate and discuss among trainees.	Apply the knowledge of these specialised haematology areas for diagnosis and management decisions. Able to provide consultation to clinical colleagues.
Transfusion medicine <ul style="list-style-type: none"> Donor procurement Blood component Transfusion therapy 	Understand the concepts of transfusion therapy and its complications.	Apply the knowledge of transfusion therapy and its complication for the	Apply the knowledge of transfusion therapy of more complex cases for diagnosis.	Apply the knowledge of transfusion therapy of more complex cases and relate them to diagnostic

HAEMATOLOGY				
YEAR OF PROGRAMME	Year 1	Year 2	Year 3	Year 4
TARGET COMPETENCE LEVEL	1 - 2	2 - 3	3 - 4	4 - 5
<ul style="list-style-type: none"> • ABO, Rh and other clinically important blood group systems • Transfusion microbiology 	Able to access reference texts, atlases and online resources to read about the salient features of these conditions.	laboratory interpretation. Able to access journal articles to read about these conditions.	Able to lead, communicate and discuss among trainees.	and management decisions. Able to provide consultation to clinical colleagues.
Specialised transfusion medicine <ul style="list-style-type: none"> • Stem cell transplantation • Genetic aspect of transfusion medicine • Extended immunohaematology test 	Understand the basic concepts of specialised transfusion medicine.	Apply the knowledge of specialised transfusion medicine disorder for interpretation under direct supervision.	Apply the knowledge of specialised transfusion medicine disorder for interpretation. Able to lead, communicate and discuss among trainees.	Apply the knowledge of specialised transfusion medicine disorder for diagnosis and management decisions. Able to provide consultation to clinical colleagues.
Laboratory management and safety	Understanding general principles of laboratory safety.	Understand the general principles and importance of laboratory quality management systems	Understand specific applications to the Haematology and Transfusion Medicine laboratory	Apply the knowledge for laboratory management and safety for management of patients.
Principles of the haematology and blood transfusion tests <ul style="list-style-type: none"> • Staining method (Romanowsky, MGG, supra vital, cytochemical, Perls) • Immunophenotyping, electrophoresis, chromatography, agglutination • Automation 	Understand the principle of tests.	Understand the limitations and interference which might affect the interpretation of the test.	Understand the corrective actions to be taken for any errors or interference occurring.	Able to lead, communicate and discuss among junior colleagues and advise clinical colleagues.

HAEMATOLOGY				
YEAR OF PROGRAMME	Year 1	Year 2	Year 3	Year 4
TARGET COMPETENCE LEVEL	1 - 2	2 - 3	3 - 4	4 - 5
Content	SKILLS			
Pre-examination of specimen	Understand the principles of specimen reception and rejection, screening, and labelling.	Understand and apply criteria of specimen rejection and implications.	Understand how the pre-analytical factors affect the analytical aspect and how the corrective actions to be taken.	Able to train junior colleagues and advise clinical colleagues on the pre-analytical aspect.
Routine Haematology <ul style="list-style-type: none"> • Full blood picture • Reticulocyte count • Automated full blood count • ESR • Coagulation tests 	Understand the basic principles (pre-analytical, analytical, post-analytical) and clinical utility of these tests.	Apply the utility of these techniques and test results to the clinical setting of haematological cases. Able to derive diagnoses of common and straightforward haematological disorders.	Able to start deriving diagnoses of more difficult cases. Able to supervise junior colleagues in the interpretation of common and straightforward cases Able to understand diagnostic limitations, pitfalls and recent advances in knowledge.	Able to derive diagnoses of the majority of difficult cases. Able to discuss and provide consultation with clinical colleagues.
Special haematology <ul style="list-style-type: none"> • Haemoglobin analysis • Haemolytic workup • Coagulation test • Platelet function testing • Immunophenotyping 	Able to detect and describe the laboratory findings of the common haematological disorders.			
Bone marrow examination <ul style="list-style-type: none"> • Bone marrow aspiration and biopsy • Cytochemical staining • Immunohistochemistry 				
Blood banking & Transfusion Medicine <ul style="list-style-type: none"> • ABO, Rh grouping • Crossmatching • Antibody screening/identification • Coomb test • Blood component preparation • Donor counselling & management • Transplantation 				

HAEMATOLOGY				
YEAR OF PROGRAMME	Year 1	Year 2	Year 3	Year 4
TARGET COMPETENCE LEVEL	1 - 2	2 - 3	3 - 4	4 - 5
Genetic testing in Haematology <ul style="list-style-type: none"> • Cytogenetics – karyotyping, FISH • PCR based techniques 	Understand the concept and basic principles of genetic testing in haematology	As above	As Above	As Above
Quality management <ul style="list-style-type: none"> • Quality management in haematology/blood transfusion • Laboratory accreditation 	Understand the basic principles and clinical utility of quality management in haematology/transfusion laboratory.	Apply the knowledge in laboratory management.	Able to troubleshoot for outliers / non-conformance in the testing.	Able to discuss and provide consultation with laboratory colleagues.
Laboratory information system (LIS)	Understanding the concept and usage of LIS. Able to enter records into the LIS.	Able to retrieve records from the LIS.	Able to compile records from the LIS.	Able to teach junior colleagues on record entry, retrieval and compilation of data from the LIS. Able to apply LIS records for laboratory management.

3.1 Curriculum structure

The syllabus broadly covers THREE (3) major focus areas (clinical, technical and management aspects of Haematology) in which the trainee must progress in both knowledge and skills throughout the training programme

Focus Area	Topics
Clinical aspects	<ul style="list-style-type: none">• Pathophysiology of diseases.• Interpretation of laboratory test results relating to assay methodology and patient's clinical condition.• Selection of appropriate tests for investigation of more complex disorders.• Provision of interpretative comments to written reports crucial to clinical management.• Basic knowledge and understanding of other Pathology specialties as required.
Technical aspects	<ul style="list-style-type: none">• Principles and Applications of Analytical Techniques in Haematology:<ul style="list-style-type: none">» Common Laboratory Techniques» Specialised Laboratory Techniques• Factors affecting Laboratory Processes in Haematology:<ul style="list-style-type: none">» Pre-Analytical» Analytical» Post-Analytical
Management aspects	<ul style="list-style-type: none">• Organisation of Laboratory Services• Personnel Management• Facilities and Safety• Resourcing and Finances• Purchasing and Inventory• Laboratory Information System (LIS)• Risk Management• Laboratory Quality Management System (QMS)• Laboratory Accreditation

Learning Outcomes

Stage 1

1. To apply basic theoretical knowledge in the selection, interpretation and reporting of laboratory investigations of common haematological disorders.
2. To apply basic theoretical knowledge in the selection, interpretation and reporting of routine transfusion medicine procedures
3. To work collaboratively with physicians in solving common problems associated with transfusion.
4. To apply a holistic understanding of the involvement of Chemical Pathology, Medical Microbiology and Anatomical Pathology in relation to Haematology.

- To apply standard operating procedures in laboratory management including laboratory organisation, quality assurance, and laboratory safety.

Stage 2

- To acquire the appropriate competencies in the selection and utilisation of routine and special haematological tests.
- To acquire competency in interpretation and reporting of results in order to optimise patient care.
- To apply the appropriate competencies in developing and undertaking research.
- To acquire the appropriate competencies in the management of laboratory services i.e., haematology and transfusion medicine, including implementation of quality assurance system.
- To demonstrate professional conduct as a Haematologist.

The knowledge and skills syllabi will support the development of the trainee in the various modalities of Haematology throughout the training programme.

Professional Behaviours

Professionalism is 'placing the interests of the patient above those of the specialist, setting and maintaining standards of competence and integrity, and providing expert advice to society on matters of health'. Therefore, the highest standards of professional behaviour must be instilled in and practised by all trainees.

Domains	Positive behaviours
Responsibility	<ul style="list-style-type: none"> Punctuality Conscientiousness Industriousness Accurate documentation
Relationships with and respect for patients	<ul style="list-style-type: none"> Maintenance of patient confidentiality Appropriate behaviour Respect of boundaries Respect of cultural differences Effective communication Courtesy in all interactions
Probity and honesty	<ul style="list-style-type: none"> Ethical decision-making based on best evidence Transparency Integrity
Self-awareness and capacity for reflection	<ul style="list-style-type: none"> Constructive attitude to feedback Willingness to learn from experiences of self and others Regular audit of outcomes
Collaboration and working with colleagues	<ul style="list-style-type: none"> Teamwork and collaboration Effective communication Appropriate behaviour Avoidance of negative behaviours, such as bullying and harassment Respect of diversity and boundaries Promotion of a positive workplace culture

Research Syllabus

Haematologists must be trained in applying the principles of evidence-based medicine in clinical practice in order to offer the best available care to their patients, while accounting for local resources and cultural expectations.

The postgraduate training syllabus includes the requirement for completion of a research project leading to a research report. Trainees are also exposed to journal clubs, symposia and scientific conferences, to improve and expand their understanding of research principles.

The research syllabus consists of the following:

Clinical research design <ol style="list-style-type: none">1. Understanding the value of clinical research2. Formulating the research question<ul style="list-style-type: none">» Literature review» tools for managing your references3. Choosing the right study design for the research question4. Assessing feasibility5. Ethics approval - considerations and the application process6. Funding – sourcing, application and increasing their chances of success
Statistics and other methods of data analysis <ol style="list-style-type: none">1. Quantitative methods2. Qualitative methods3. Sample size and power calculation4. Sampling methods
Good clinical practice <ol style="list-style-type: none">1. Defining Good Clinical Practice2. Collaborators' roles in clinical research<ul style="list-style-type: none">» Investigator-initiated studies» Sponsor-initiated studies3. Institutional research boards (IRB) and institutional ethics committees (IEC)4. Protocol deviations5. Informed consent6. Safety management
Scientific writing <ol style="list-style-type: none">1. Principles of scientific writing2. Converting data into a manuscript3. Plagiarism, and how to use plagiarism checkers4. Choosing a journal5. Journal formats6. Writing an abstract7. Writing a cover letter
Research presentation skills <ol style="list-style-type: none">1. Designing slide presentations and posters2. Capturing an audience - verbal and non-verbal skills3. Defending your work4. Concluding strongly

Course Content

Stage 1 Theoretical aspects Haematology

1. Haemopoiesis and normal haemostasis
2. Red cells disorders:
 - Anaemias: Nutritional anaemias, anaemia of chronic disease and aplastic anaemia
 - Haemolytic anaemias
 - Thalassaemia and common haemoglobinopathies.
3. White cell disorders:
 - Benign – Infections, leukaemoid reaction
 - Acute Leukaemias, chronic leukaemias, multiple myeloma, myeloproliferative neoplasms, myelodysplastic syndrome, and lymphoproliferative disorders
4. Bleeding disorders caused by vascular, platelet abnormalities and coagulation disorders
5. Thrombophilia
6. Basic genetic concept in haematology
7. Basic principles of quality assurance in haematology

Transfusion Medicine

1. ABO, Rh and other clinically important blood group systems
2. Pre-transfusion testing – blood grouping, antibody screening/identification, compatibility testing
3. Haemolytic disease of the foetus and newborn
4. Preparation, storage and use of blood components
5. Complications of blood transfusion
6. Donor management
7. Basic principles of quality assurance in transfusion medicine

Practical Aspects

PRACTICAL SKILL TO BE ACQUIRED	Level of practical competency	Level of interpretation competency
Automated full blood cell count	3	5
Full blood picture	3	5
Perform a manual differential count	3	5
Bone marrow examination	3	3
Reticulocyte count	3	5
ESR estimation	3	5
G6PD screening	3	5
Hb analysis	3	4
Routine coagulation screen – PT, APTT, Mixing tests, TT, FDP, D-Dimer, Fibrinogen, bleeding time	3	5
Special coagulation tests factor assay, inhibitor, thrombophilia	3	4
ABO, Rhesus grouping	3	5
Antibody screen, antibody identification, antihuman globulin test	3	5
Cross-matching	3	5
Component preparation and storage	1	Not applicable

Note: Students are required to acquire basic knowledge in QA management in practical competency

Stage 2 Theoretical aspects Haematology

1. Haemopoiesis and its clinical relevance
2. Red cells disorders:
 - Anaemias: Nutritional anaemias, anaemia of chronic disease and aplastic anaemia
 - Haemolytic anaemias
 - Thalassaemia and haemoglobinopathies.
 - Congenital anaemias
3. White cell disorders:
 - Benign – Infections, leukaemoid reaction, storage disease, congenital anomalies of WBC
 - Leukaemias, multiple myeloma, myeloproliferative neoplasms, myelodysplastic syndrome and lymphoproliferative neoplasm
4. Bone marrow failure and infiltration
5. Bleeding disorders- acquired and inherited bleeding disorders caused by vascular and platelet abnormalities, coagulation disorders
6. Thrombophilia- acquired and inherited disorders
7. Genetic aspect of haematological disease
8. Haematological changes in systemic diseases
9. Paediatric haematological disorders
10. Quality assurance in haematology
11. Stem cell transplantation
12. Management of haematological disorders

Transfusion Medicine

1. Donor procurement
2. Type, preparation, storage and clinical use of blood components
3. ABO, Rh and other clinically important blood group systems and antibody
4. Blood group discrepancies
5. Pre-transfusion testing - blood grouping, antibody screening/identification, compatibility testing. Compatibility testing and management of blood incompatibility
6. Blood transfusion in special groups
7. Near misses, transfusion errors, complications of blood transfusion
8. Haemolytic disease of the newborn
9. Stem cell transplantation
10. Genetic aspect of transfusion medicine
11. Transfusion microbiology
12. Quality assurance in blood transfusion

Practical Aspects

PRACTICAL SKILL TO BE ACQUIRED	Level of practical competency	Level of interpretation competency
Routine Haematology tests and procedures:		
Full blood picture	4	5
Reticulocyte count – manual and automated Automated cell counting	4	5
ESR	4	5

PRACTICAL SKILL TO BE ACQUIRED	Level of practical competency	Level of interpretation competency
Stem cell collection, processing and cryopreservation	2	4
HLA typing	3	5
CD34 enumeration	3	5
Genetic tests:		
Cytogenetics – karyotyping, FISH	2	4
PCR based techniques	2	4
Laboratory Management:		
Quality Management activities		
Quality assurance scheme	5	5
Laboratory accreditation		

4 MODE OF TEACHING AND LEARNING

Stages of Training for the Master of Pathology (Haematology) Programme:

Stage 1 is ONE (1) year in duration. In summary, the trainee will start by attending an Orientation programme, and during Stage 1, one-month Foundation posting rotations to each of the other major specialties of Pathology, namely: Anatomic Pathology, Medical Microbiology and Chemical Pathology, to familiarise themselves with the workings of these other Pathology specialities. The trainee will undergo supervised competency-based training in Haematology for the remainder of Stage 1. At the end of Stage 1, the trainee who has satisfactorily completed training will sit for an examination in Haematology (Part 1 Examination).

Stage 2 is THREE (3) years in duration during which the trainee will undergo supervised competency-based training in Haematology with the aim of progression to Level 5 competence. Some subspeciality areas will be introduced at this stage such as adult and paediatric haematology, transfusion medicine, haemopoietic stem cell transplant, molecular genetics, advanced haemostasis and immunology. Competency based training is supplemented by lectures, seminars, conferences and discussions. Trainees are expected to read widely, not only the literature of Haematology itself but also related subjects such as biochemistry, genetics, molecular biology and statistics. All trainees are also required to attend intensive as well as other relevant courses and continuous professional development activities.

In Stage 2, the trainee will also be introduced to research methodology, data analysis and writing a research report/dissertation. With the guidance of the supervisors (academic/ clinical/ research), the trainee will plan and undertake a research project and write up a research report/dissertation. To facilitate understanding of research methodology, all training universities will conduct a research methodology course and all trainees are required to attend the course. After satisfactory completion of training in Stage 2, the trainee sits the Final (exit) examination.

5 SUPERVISION AND PROGRESS REPORTS

The medical school will appoint a qualified haematologist to be a supervisor for each candidate. The supervisor is responsible for the progress report of the candidate.

6. EXAMINATION AND ASSESSMENT

Formative and summative assessments are carried out to assess all domains in which the modern Haematologist is expected to be competent. Assessments serve the following key functions:

1. To track the trainee's achievement of the required competencies, facilitate the provision of feedback, and identify opportunities for improvement.
2. To ascertain if the trainee has met the learning requirements and competencies expected from a placement/rotation as a precursor to progressing to the next placement and/or stage of training

Methods of Assessment

Trainees will be subject to formative assessments and summative assessments.

The formative assessment in Haematology training will be largely workplace-based assessment (WBA), which is the appraisal of the trainee's professional skills and attitude that evidences the trainee's actual performance in the workplace. The assessment methods for WBA include directly observed practical skills (DOPS), case-based discussion (CBD), evaluation of clinical events (ECE) as well as multi-source feedback (MSF). The WBA methods (adapted from the Royal College of Pathologists, UK) are purposed as:

1. Directly Observed Practical Skills (DOPS) are used to assess the trainee's ability to conduct the skills (technical & reporting) as required for the different stages of training. The assessor gives immediate feedback to the trainee and further develops the trainee's strengths as well as identifying areas for improvement.
2. Evaluation of Clinical Events (ECE) is used to assess the trainee's ability to perform tasks, which involve teamwork and interacting with other professional colleagues.
3. Case-Based Discussion (CBD) is used to assess the trainee's ability to apply their medical knowledge in decision-making for patient care and running a safe, efficient and reliable Haematology Pathology service.
4. Multi-source Feedback (MSF) is used to assess the trainee's professional and personal development and research progress. Generally, the supervisor's report provides the main feedback. The supervisor may also take into consideration comments from other staff who have had the opportunity to work with the trainee. The trainee may conduct a self-appraisal and discuss this with their supervisor, with the objective of ensuring they are guided to reach the conduct level required at the professional level of a medical specialist.

WBAs used to ensure the trainee reaches the expected standard before progression to the next stage of training. They also provide regular feedback to the trainee on their progress

For the university programme summative assessments are made up of two examinations, the Part 1 examination and the Final (exit) examination.

The Part 1 examination taken at the end of ONE (1) year of training aims to identify the trainee's suitability to continue training in Haematology.

The Final (exit) examination is to ensure the trainee has achieved a level such that they are able to practice unsupervised as a general [unsupervised] Haematologist. The formative assessment in the parallel pathway essentially tests the same concepts as that of the university programme. The summative assessment will follow the requirements of the respective bodies granting the qualifications of the parallel pathway. The rest of this section will focus on the assessments for the training programme leading to the Master of Pathology (Haematology) of the university pathway

Training Placements for Stages 1 and 2

Stage 1

1. A one-month Foundation posting rotation to each of the other major specialties of Pathology, namely: Chemical Pathology, Medical Microbiology and Anatomical Pathology, to familiarise themselves with the workings of these other specialties of Pathology.
2. Failure to obtain a "Satisfactory" grade in a trainee placement will result in the trainee having to repeat the training placement.
3. Trainees must obtain a "Satisfactory" grade for the placement immediately preceding the date of the Part I examination. Failure to obtain a "Satisfactory" grade for this placement will disqualify the trainee from the Part I examination. Failure to sit for
4. The Part I examination for this reason may be considered a failed attempt at the examination.
5. The trainee will undergo supervised competency-based training in Haematology for the remainder of Stage 1.

Stage 2

1. The trainee will undergo supervised competency-based training in Haematology with the aim of progressing to Level 5 competence. Some subspecialty areas will be introduced at this stage, including adult and paediatric haematology, haemopoietic stem cell transplant, molecular genetics, advanced haemostasis and immunology.
2. Trainees are also required to complete and submit a research report SIX (6) months prior to the Final examination.
3. A satisfactory completion of a research project is evidenced by a pass assessment of a research report. A pass re-evaluation after remedial action can replace an unsatisfactory/failed initial evaluation.

Trainees are required to pass the Final (exit) examination to complete the training programme.

Formative Assessments

Formative assessments in Haematology training will be largely workplace-based assessments (WBAs). This is the appraisal of the trainee's professional skills and attitudes that evidences their actual performance in the workplace.

These are for the continuous provision of feedback and identification of areas for improvement, and are carried out throughout the training programme. The assessment tools for WBAs include Directly Observed Practical Skills (DOPS), Case-Based Discussions (CBD), Evaluation of Clinical Events (ECE) as well as Multi-Source Feedback (MSF).

The table below provides a brief description of WBAs:

WBA		Description
DOPS	Directly Observed Practical Skills	The emphasis of DOPS assessments is provision of feedback that supports the development of competency and proficiency. The assessment typically takes 15-20 minutes, with an additional 5 minutes for feedback.
CBD	Case-Based Discussions	CBD provide the trainer the means of reviewing a trainee's practice or their thoughts about practice. It enables trainers to explore the thinking of their trainee, share understanding, and develop professional thinking. Each assessment should typically take 15-20 minutes with an allowance of an additional 5-10 minutes for feedback provision by the assessor.
ECE	Evaluation of Clinical Events	A tool used for assessing the trainee in the performance of their duties in complex tasks, often involving teamworking or interacting with other professional staff.
MSF	Multi-Source Feedback	Feedback provision from wide range of staff in multiple roles who have had engagement with the trainee.

Assessment Objectives and Tools for Assessment

	Assessment Objective	Tools
1	Demonstrate the trainee's achievement of knowledge and skills	DOPS, CBD, SA-1&2
2	Identify and ensure the candidates' suitability for continued training in Haematology	SA-1, MSF
3	Provide the trainee with feedback about progress	DOPS, ECE, CBD, MSF
4	Ensure the trainee is ready to progress to next stage of training	DOPS, ECE, CBD, MSF
5	Ensure the trainee at the end of the training program can practice as an independent general Haematologist.	DOPS, ECE, CBD, MSF, SA-2
6	Demonstrate the development of the skill for research	ECE, MSF
7	Demonstrate management skills for running the laboratory	CBD
8	Demonstrate familiarity with laboratory accreditation	CBD
9	Demonstrate the ability to act professionally at all times	ECE, MSF

Summary of the Assessment Strategy for all Haematology Trainees:

Element	Details	End of attachment	End of year	End of training	Comments
Portfolio	Record of professional learning, WBAs, supervisor reports, reflections, and development activities	N/A	Satisfactory completion of the year (at Annual Review)	Satisfactory completion of training (at Annual Review)	The Portfolio is a record of all training activities and forms an integral part of the evidence to demonstrate professional development. Subsequently used for NSR registration.
Research / Audit	Evidence of project management	N/A	Conducted throughout years 2-4. Progress to be demonstrated	Submitted as part of the evidence for completion of training	Application of the scientific approach including formulating an idea, literature reviewing, interpretation and analysis OR an audit / a quality improvement exercise.
Workplace-based assessments	DOPS ECE CBD MSF	Minimum 1 DOPS every 3 months Minimum 1 CBD and 1 ECE every 4 months	Minimum 4 DOPS every year (years 2-4) Minimum 3 CBDs and 3 ECEs every year 1 MSF for every year (but more frequently if needed)	Minimum 12 DOPS Minimum 9 CBDs and 9 ECEs Minimum 4 MSF Evidence of 1 consultation to clinician in managing / resolving a case	WBAs provide an opportunity for feedback and reflection. They will also be used as part of the evidence for the end of year / training Portfolio review.
Educational and Clinical Supervisor Reports	Summary of progress through postings and learning sessions	Satisfactory completion of attachment			Part of the Portfolio
Courses, Workshops and Conferences	Developing knowledge and skills				Part of the Portfolio

Formative Assessment (WBA)

In Haematology, the formative assessment of the trainee is carried out at the workplace. The trainee is expected to undergo regular WBAs, which will chart the trainee's educational progress throughout the training programme. Recognition of any weakness in the trainee's education should be quickly remedied. In general, the trainee should demonstrate "satisfactory" progression before progressing to the next stage of training.

Stage 1

Topic	Reports per Trainee
Completed FBP reports with abnormal findings	50
Satisfactory completed Hb analysis reports with abnormal findings	20
Satisfactory BMAT and flowcytometry reporting	10
Satisfactory coagulation test review with abnormal findings (PT, APTT, D-dimer, mixing test)	20
Satisfactory ABO/RhD blood grouping, antibody screening and antibody identification and crossmatching	20
Pre-donation counselling and donor management	20

Stage 2

Spiral progression of competence achievement in the validation, interpretation and consultation of reports (reports per trainee):

Topic	Reports per Trainee
Satisfactorily completed FBP reports with abnormal findings	250
Satisfactorily Hb analysis reports with abnormal findings	80
Satisfactorily BMAT and flowcytometry reporting	50
Satisfactorily review of basic coagulation test with abnormal findings (PT, APTT, D-dimer, mixing test, special coagulation test reporting (thrombophilia, factor assay, inhibitor, platelet aggregation, VWD study, LA study)	80
Satisfactory ABO/RhD blood grouping, antibody screening and antibody identification and crossmatching, reporting extended immunohematology test (Coombs test, Ab titre, elution, adsorption, Du test, phenotyping, ABO discrepant, DL test, secretor test)	80
Pre-donation counselling and donor management	80

Topic	Reports per Trainee
Donor microbiology tests (serology and NAT)	20
Satisfactory review of stem cell processing and storage	10
Research project report	1

Throughout the programme

- Academic and Clinical/Research Supervisors reports (at least twice per year)
- All other learning assignments as determined by the respective training centres

Other evidence of involvement/participation in workplace practices, which should be made available on request.

Summative Assessments

The Master of Pathology (Haematology) examinations include TWO (2) major summative assessments, the Part 1 Examination at the end of the first year, and the Final (exit) examination at the end of the fourth year (or final year).

Any trainee who has failed the Part 1 examination at the first attempt is permitted TWO (2) resits of the examination at SIX (6) monthly intervals in Year 2. A trainee who has failed the Final (exit) Examination at the first attempt is permitted up to a maximum of FOUR (4) resits, to be completed within the maximum period of SEVEN (7) years of the whole training programme.

The trainee is only permitted to sit for the Final (exit) examination on satisfactory completion of training having fulfilled all prerequisites as outlined in the curriculum.

Examinations are outlined as follows:

Part 1 Examination (SA-1)

The Part 1 examination comprises of (i) Theory and (ii) Practical components.

To pass the Part 1 examination, the trainee must satisfactorily pass BOTH the theory AND practical components of the examination.

Final (exit) Examination (SA-2)

The Final (exit) examination comprises of (i) Theory, (ii) Practical and (iii) Viva Voce.

To pass the Final examination, the trainee must satisfactorily pass BOTH the theory AND practical components of the examination. In addition, a viva voce will be conducted. The trainee must obtain an overall score of at least 50%.

Master of Pathology Part 1 and Final (exit) examinations Regulations and Components are summarised in the table below, including repeat examinations.

The Master of Pathology Part 1 Examination Regulations and Components

The Part 1 examination will comprise:

Examination component	Weighting (Marks)	Weighting (%)	Requirement to pass the examination
Theory <ul style="list-style-type: none">• MCQ• Essay	200 <ul style="list-style-type: none">• 100• 100	50%	50% of 200 marks
Practical	100	50%	50% of 100 marks
Total (Overall)	300	100%	50% of 300 marks

Examination component	Weighting (Marks)	Weighting (%)	Requirement to pass the examination
Theory	200	40%	50% of 200 marks
Practical <ul style="list-style-type: none"> • Morphology • Transfusion • Coagulation/Misc. • Clinical 	<ul style="list-style-type: none"> • 90 • 90 • 30 • 30 	<ul style="list-style-type: none"> • 20% • 10% • 15% • 5% 	50% of 300 marks
Viva voce	100	10%	Mandatory attendance
Total (Overall)	600	100%	50% of 600 marks

To pass the Final (exit) examination, the trainee must obtain, at least:

- an **overall** score of 50% AND
- a pass (50%) in BOTH theory and practical
- AND attend the viva voce

Repeat examination

1. Repeat examination attempts for trainees who have obtained an overall score of less than 50% OR failed to attend the viva voce

After satisfactorily completing a further 1 (ONE) year of training the trainee will be examined on the theory and practical components as well as having to attend a compulsory viva voce. The components of the examination and their weightings will be as in the main examination.

To pass the repeat examination, the trainee must obtain, at least:

- an overall score of 50% AND
- a pass (50%) in BOTH theory and practical
- AND attend the viva voce

2. Repeat examination attempts for trainees who have obtained an overall score of 50% or more but have failed in either the theory or practical component.

After satisfactorily completing a further SIX (6) months of training the trainee will be examined in the failed component as well as having to attend a compulsory viva voce.

The components and weighting of the 6-month repeat examination are as follows:

Examination component	Weighting (Marks)	Weighting (%)	Requirement to pass the examination
Theory ¹	200	40%	50% of 200 marks
Practical ²	300	50%	50% of 300 marks
Viva voce	100	10%	Mandatory attendance
Total (Overall)	300 ¹ or 400 ²	100%	50% of 300 ¹ or 400 ² marks

To pass this repeat examination, the trainee must obtain a pass mark of at least 50% in the theory or practical component that they have sat for.

The trainee is only allowed to repeat the examination of the failed theory or practical twice consecutively. If the trainee fails on the second repeat attempt, the trainee must repeat BOTH the theory and practical components and viva-voce after SIX (6) months, or after ONE (1) year based on the recommendation of the Board of Examiners'. The components and weightings of the repeat examinations will be as in 1 and 2 above.

3. A trainee is allowed a maximum of FOUR (4) repeat examination attempts.
4. The maximum duration permitted for the completion of the entire programme is SEVEN (7) years.

Summary of the Examination for all Haematology Trainees

Part	Examinations	When	Components	Occurrence	Comments
Part 1 (SA-1)	Haematology (Part 1 Examination)	End of Stage 1 (end of Year 1)	MCQ, Essay and OSPE	Once per year. A trainee who has failed may be allowed to repeat the examination after 6 months.	A trainee is allowed a maximum of two repeat examinations to pass the Stage 1 examination.
Final (exit) (SA-2)	Haematology (Final exit Examination)	End of Stage 2 (end of Year 4)	Essay, Practical and Viva Voce	Once per year. Refer to Appendix 9 for repeat examination.	A trainee is allowed a maximum of four repeat examinations. The maximum duration permitted for the completion of the entire programme is SEVEN years

Maintenance of Trainee Portfolio

The Trainee Portfolio is a compilation of training / learning events and formative assessments activities throughout training. The Trainee Portfolio should contain the following documents:

- Learning agreements
- Procedure logbook
- ALL WBAs
- All research report progress evaluations
- End of Posting evaluation reports
- Proof of attendance of CPD activities

Research Report Progress Evaluations

Research report progress is evaluated SIX (6) monthly. This meeting is attended by trainees in Stage 2 of training, supervisors, and programme coordinators. This exercise aims to identify potential problems and allows for the provision of feedback and suggestions to overcome problems identified. Each evaluation is recorded in a research report progress evaluation form. This form must be kept in the Trainee Portfolio with a copy provided to the office of the programme administrators.

Trainees are required to submit the completed research report SIX (6) months before the Final (exit) Examination. A satisfactory completion of a research project is evidenced by a pass assessment of a research report. A pass re- evaluation after remedial action can replace an unsatisfactory/failed initial evaluation.

7. ENTRY REQUIREMENTS

Applicants generally fall into the following groups:

1. Ministry of Health (MOH) sponsored candidates
2. Non-MOH, government sponsored (e.g. Ministry of Defence)
3. Other sponsored trainees (e.g. sponsored by University or private institutions)
4. Private – self funded trainees
5. International - non-Malaysian foreign trainees who may be self-funded or sponsored by a variety of agencies or government.

Essential Criteria

Candidates who wish to pursue post-graduate training in Haematology have to fulfil the following requirements:

Component	Entry Requirement	Evidence
Medical Degree registrable with Malaysian Medical Council (MMC)	Mandatory	Original certificate
Full registration with MMC	Mandatory	Certificate of registration
Clinical Experience	Mandatory: 3 years of clinical experience after attainment of the basic medical degree, comprising of: a: satisfactory completion of housemanship, and b: post-housemanship clinical experience of at least 1 year duration	Authorised service record
Valid APC	Mandatory	Certificate
Clinical Skills and Knowledge as per Entry ELA	Mandatory	Demonstrate relevant knowledge and skills during entrance evaluation. Letters of reference
Entrance Evaluation	Mandatory	Satisfactory performance
Additional requirements for International Candidates		
Good Standing	Mandatory	Letter of Good Standing from Medical Council of country of current practice
TPC or APC from MMC	Mandatory	Certificate
Component	Entry Requirement	Evidence
Clinical or laboratory attachment for a minimum of 3 months before joining the pathology training programme	Mandatory	Satisfactory supervisor's report
Proficiency in written and spoken English language (if basic degree is from an institution of higher learning where the medium of instruction for that degree is not the English language)	Mandatory	TOEFL or other relevant transcripts which meets requirements of training university

Important:

1. Any falsification of documents will result in the application being rejected and the applicant will be reported to the MMC.
2. Any adverse reports such as an investigation by the MMC must be declared to the Selection Committee.

Expected Pre-Entrance Basic Knowledge and Experience

Basic Knowledge

Trainees entering Haematology training are expected to have at least 3 years of clinical experience after the attainment of their basic medical degree, with at least minimum basic knowledge on:

- Anatomy, physiology and biochemistry of the haemopoietic system
- Applied pathophysiology of the haemopoietic system
- Basic human genetics

Entry Essential Learning Activities (Entry ELAs)

Entry ELAs are activities that prospective trainees should be able to perform in a trustworthy manner by the time they enter postgraduate training in Haematology. The Entry ELAs have been selected to represent the typical day-to-day work in Haematology. They indicate the knowledge, skills and attitudes that are essential for all candidates to demonstrate. They also serve as learning opportunities for prospective trainees when they are tasked to undertake the activities and then receive feedback regarding their performance.

The objective of each ELA is to identify and describe key areas in three domains – knowledge, skills and attitudes (KSA), that collectively determine whether a clinical task has been completed successfully. To this end, they also illustrate some examples of positive and negative behaviours of relevance and attention for the given clinical task. For entry assessment, candidates are expected to demonstrate some basic clinical competency in the following three Entry ELAs for Haematology,

ELA 1	Request for coagulation tests
ELA 2	Investigation of anaemia
ELA 3	Blood/ Blood Component Transfusion Request Procedure

*The list of entry ELAs is not exhaustive and may be updated according to programme requirement

Personal Qualities

- The student should be committed to self- learning and have the aptitude for searching online pathology education resources.
- The student should be committed to continued professional development and life-long learning. They should have the aptitude for the group fora, professional discourse, and participation in live and virtual seminars/webinars and conferences.
- The students should behave with integrity, honesty and responsibility at all times in their practice.
- The students should have critical and analytical thinking in their practice. They should be a problem-solver rather than a complacent follower.
- The student should have an empathetic nature and be able to communicate well with colleagues and patients.

8. DURATION OF TRAINING

The minimum duration of training is four (4) years with a maximum of seven (7) years.

9. CURRICULUM AND SYLLABUS

Summary Knowledge and Skills Syllabi in Haematology

Summary of Knowledge and Skills Syllabus Haematology	
Haematology	
Topic	Knowledge Content
Red cell disorders	<ul style="list-style-type: none"> Anaemias – nutritional, haemolytic, bone marrow failure Thalassaemia and haemoglobinopathies
White cell disorders	<ul style="list-style-type: none"> Benign disorders Acute leukaemia and chronic leukaemias Multiple myeloma Myelodysplastic syndromes Bone marrow failure
Haemostatic disorders	<ul style="list-style-type: none"> Vascular and platelet abnormalities Bleeding and thrombotic disorders
Specialised haematology	<ul style="list-style-type: none"> Haematological changes in systemic diseases (renal, liver, thyroid, connective tissue, malignancy, and chronic infection) Paediatric haematological disorders (TAM, HDN, MDS, inherited BM failure) Special haemostasis (thrombophilia, inhibitors) Genetic aspect of haematological disease
Transfusion medicine	<ul style="list-style-type: none"> Donor procurement Blood component Transfusion therapy ABO, Rh and other clinically important blood group systems Transfusion microbiology
Specialised transfusion medicine	<ul style="list-style-type: none"> Stem cell transplantation Genetic aspect of transfusion medicine Extended immunohaematology test
Laboratory management and safety	<ul style="list-style-type: none"> Understanding general principles of laboratory safety
Principles of the haematology and blood transfusion tests	<ul style="list-style-type: none"> Staining method (Romanowsky, MGG, supra vital, cytochemical, Perls) Immunophenotyping, electrophoresis, chromatography, agglutination Automation
Skills Content	
Pre-examination of specimen	Understand the principles of specimen reception and rejection, screening, and labelling

Summary of Knowledge and Skills Syllabus Haematology

Haematology

Routine Haematology	<ul style="list-style-type: none"> • Full blood picture • Reticulocyte count • Automated full blood count • ESR • Coagulation tests
Special haematology	<ul style="list-style-type: none"> • Haemoglobin analysis Haemolytic workup • Coagulation test • Platelet function testing • Immunophenotyping
Bone marrow examination	<ul style="list-style-type: none"> • Bone marrow aspiration and biopsy • Cytochemical staining • Immunohistochemistry
Blood banking & Transfusion Medicine	<ul style="list-style-type: none"> • ABO, Rh grouping Crossmatching • Antibody screening/identification Coomb test • Blood component preparation Donor counselling & management Transplantation
Blood banking & Transfusion Medicine	<ul style="list-style-type: none"> • ABO, Rh grouping Crossmatching • Antibody screening/identification Coomb test • Blood component preparation Donor counselling & management • Transplantation
Genetic testing in Haematology	<ul style="list-style-type: none"> • Cytogenetics – karyotyping, FISH • PCR based techniques
Quality management	<ul style="list-style-type: none"> • Quality management in haematology/blood transfusion • Laboratory accreditation
Laboratory information system (LIS)	<ul style="list-style-type: none"> • Understanding the concept and usage of LIS • Able to enter records into the LIS

Summary of Knowledge and Skills Syllabus Haematology

Foundation Anatomic Pathology

Content	Knowledge Content
Basic understanding	<ul style="list-style-type: none"> • Cell degeneration and necrosis Inflammation and repair • Adaptive mechanisms Haemodynamic disorders • Growth and differentiation disorders • Neoplasia • Nutritional disorders • Disorders related to environment • Inborn errors of metabolism • Genetic disorders • Growth abnormalities
Systemic Pathology	<ul style="list-style-type: none"> • Bone marrow, lymph nodes, liver, spleen, skin, gastrointestinal organ, genitourinary organ, endocrine glands, breast, brain disease
Practical understanding of use of anatomical pathology techniques and tests	<ul style="list-style-type: none"> • Proper use of the light microscope • Histopathology – macroscopic and microscopic examination, specimen fixation, trimming and sampling of surgical specimens, tissue processing and microtomy, H&E staining, frozen section preparation • Basic molecular pathology Autopsy

Summary of Knowledge and Skills Syllabus Haematology

Foundation Medical Microbiology

Content	Knowledge Content
Basic understanding	<ul style="list-style-type: none"> • Basic concepts of laboratory safety Basic knowledge on: <ul style="list-style-type: none"> ○ Bacteriology (e.g. transfusion transmitted infection) ○ Virology (e.g. HIV infection, transfusion transmitted infection) ○ Mycology (e.g. opportunistic infection) ○ Parasitology (e.g. malaria, hookworm infestation, filariasis) Basic concept of emerging infectious diseases (e.g. Covid 19) • Basic knowledge on antimicrobial agents and multidrug- resistant organisms • Basic principles of infection prevention and control
Practical understanding of use of microbiology techniques and tests	<ul style="list-style-type: none"> • Gram stain, acid fast stain, India ink stain • Culture, isolation, identification and antimicrobial sensitivity test for common bacterial pathogens • Rapid serological test (dipstick/ICT/Latex agglutination/RPR/ TPPA) • Enzyme/chemiluminescence immunoassay (MEIA, ELISA) Immunofluorescence tests • Immunoblot tests • Viral culture and identification • Culture, isolation and identification of fungi • Identification of common parasites in clinical specimens Molecular methods in Medical Microbiology

Summary of Knowledge and Skills Syllabus Haematology

Foundation Chemical Pathology

Content	Knowledge Content
Basic understanding	<ul style="list-style-type: none"> • Biological variability • Chemical Pathology of gastrointestinal tract hepatobiliary system renal system, cardiovascular System Acid Base Imbalance • Water and Electrolytes Proteins • Lipid • Diabetes Mellitus and abnormalities in glucose metabolism • Endocrinology – pituitary, thyroid, adrenal, reproductive system • Calcium, magnesium, phosphate and metabolic bone disorders • Biochemistry of haematological disorders Clinical Enzymology • Toxicology Cancer markers
Practical understanding of use of Chemical Pathology techniques and tests	<ul style="list-style-type: none"> • Basic laboratory techniques • Factors influencing laboratory results Laboratory Instrumentation Automated Analysers • Spectrometric methods Osmometry Electrometric methods Electrophoresis Chromatography • Molecular methods in Chemical Pathology

10. ACADEMIC AND TEACHING STAFFS

All academic and teaching staffs at the School of Medical Sciences will be involved in teaching activities. This is particularly in the stage I where the major input of basic sciences and practical aspects. Stage II be particularly involved haematologist in university and training centre. Supervisor should not supervise more than TWO (2) trainees who are in the same year of training.

11. ADMINISTRATIVE COMMITTEE

The Haematology department will be responsible in organizing and monitoring the program, preparing teaching schedule and organizing seminars pertaining to the program.

12. ADMINISTRATIVE OF EXAMINATION

The Medical School will coordinate and execute all examination. The result will be discussed at the Examination Board before approval by the Medical School Board and the Post- Graduate University Board.

