PANDUAN SISWAZAH

PROGRAM DOKTOR PAKAR PATOLOGI KIMIA

DOCTOR OF CHEMICAL PATHOLOGY PROGRAMME

FAKULTI PERUBATAN

UNIVERSITI KEBANGSAAN MALAYSIA

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Edisi pertama 2026

UNIVERSITI KEBANGSAAN MALAYSIA
The National University of Malaysia

FAKULTI PERUBATAN

FACULTY OF MEDICINE

Visi (*Vision*)

UKM bertekad menjadi universiti terkehadapan yang mendahului langkah masyarakat dan zamannya bagi membentuk masyarakat dinamik, berilmu dan berakhlak mulia.

UKM aspires to be a leading university that stays ahead of society and its time in order to nurture a dynamic, knowledgeable, and morally upright community.

Misi (*Mission*)

Menjadi universiti terpilih yang memartabatkan Bahasa Melayu serta mensejagatkan ilmu beracuan budaya kebangsaan.

To be a university of choice that upholds the Malay language while universalising knowledge shaped by the national cultural identity.

Matlamat UKM (*Goals*)

Untuk menjadi pusat keilmuan yang terkehadapan, berteknologi dan berdaya saing yang:

- Memartabatkan Bahasa Melayu sebagai bahasa ilmu;
- Membangun masyarakat dinamis dan berakhlak mulia;
- Mengantarabangsakan citra dan sumbangan UKM bagi masyarakat sejagat; dan
- Menjana teknologi yang bermanfaat kepada masyarakat.

To become a leading, technologically advanced, and competitive centre of knowledge that:

- *Upholds the Malay language as the language of knowledge;*
- *Develops a dynamic and morally upright society;*
- *Internationalises UKM's image and contributions for the global community; and*
- *Generates technology that benefits society.*

1. INTRODUCTION

General Objectives of the Programme

The Doctor of Chemical Pathology programme aims to train trainees to become competent and independent specialist pathologists who can accurately diagnose diseases through biochemical investigation, laboratory analysis, and clinicopathological correlation.

Course Learning Objectives of the Programme

I. To demonstrate advanced knowledge and skills in Chemical Pathology.
II. To demonstrate the ability to lead and contribute to education, research, and health promotion at the local, national, and international levels.
III. To demonstrate an entrepreneurial mindset and a commitment to personal development and lifelong learning in pathology.
IV. To demonstrate good ethical values and professionalism in professional practice.

This handbook outlines the structure, learning outcomes, training requirements, and assessment framework for the Doctor of Chemical Pathology programme. The programme is competency-based and integrates diagnostic service, academic learning, and research training.

Throughout the programme, emphasis is placed on professionalism, ethical practice, communication skills, and leadership, ensuring Trainees are well-prepared to function as key contributors to patient care and healthcare systems.

Ultimately, trainees will graduate as well-rounded pathologists capable of delivering high-quality diagnostic services and contributing to education, research, and innovation in pathology.

2. PROGRAMME LEARNING OUTCOME (PLO)

At the end of the programme, the trainee should be able to:

I. critically synthesise knowledge in Chemical Pathology for the formulation and planning of care for patients with complex clinical conditions.
II. apply scientific knowledge, scientific methods, and critical thinking skills in making decisions related to patient diagnosis and management.
III. demonstrate sound diagnostic and clinical skills in accordance with established standard operating procedures.
IV. demonstrate effective interpersonal skills and the ability to work collaboratively in teams.
V. communicate knowledge and provide advice effectively, both orally and in writing, to peers, other healthcare professionals, and the community.
VI. demonstrate effective use of digital technology in the practice of pathology.
VII. apply numerical skills effectively in research, diagnosis, and patient management.
VIII. demonstrate leadership qualities and decision-making ability in a range of professional situations.
IX. demonstrate good self-management and a commitment to lifelong learning.
X. demonstrate innovation and creativity in the field of pathology.
XI. demonstrate high standards of medical ethics and professionalism.

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4. PROGRAMME STRUCTURE

Part I (Year 1)

The Year 1 syllabus focuses primarily on Chemical Pathology (refer to the Syllabus Guidebook section/ *Buku Panduan Program*). Other pathology sub-disciplines (Haematology, Medical Microbiology, and Anatomical Pathology) are undertaken as minor postings (4 weeks each).

Part II (Years 2–4)

- Part II (Years 2–4) represents the advanced stage (Stage 2) of training, focusing on the progressive acquisition of specialist-level competency (Level 5) in Chemical Pathology through supervised, workplace-based training.
- The training encompasses the following domains:
    - **Core laboratory sciences**: analytical methods, instrumentation, laboratory principles, quality control, reference intervals, interpretation of laboratory data, and factors affecting test performance across the pre-analytical, analytical, and post-analytical phases.
    - **Organ/System-Based Chemical Pathology**: diagnostic application of Chemical Pathology in disorders involving the renal, liver, gastrointestinal, endocrine, reproductive, paediatric, cardiovascular, and bone/mineral systems.
    - **Metabolic and disease-focused areas**: disorders of carbohydrate, lipid, protein, and electrolyte metabolism, therapeutic drug monitoring, toxicology, tumour markers, cardiovascular biomarkers, and inherited metabolic diseases.
    - **Applied and emerging areas**: point-of-care testing, molecular applications in Chemical Pathology, laboratory informatics, and other evolving diagnostic technologies relevant to specialist practice.
    - **Laboratory management and quality assurance**: quality management systems, laboratory governance, accreditation requirements, method evaluation, laboratory safety, and service planning and delivery.
    - **Research and scholarly activities**: research methodology, critical appraisal, scientific communication, academic writing, and dissemination of research findings.

Training follows a spiral competency model, where trainees progressively handle cases of increasing complexity, transitioning from supervised to independent practice. Trainees are assessed continuously through workplace-based assessments (DOPS, CBD, ECE, MSF) and must maintain a portfolio documenting their progress. A supervised research project is mandatory. Successful completion of all training requirements, including the final examination, is required for graduation as a specialist in Chemical Pathology.

Duration of the programme

The total duration of the training programme is **FOUR (4)** years (48 months).

5. TEACHING AND LEARNING STRATEGIES

The programme employs a variety of structured and work-based teaching and learning strategies to support the development of knowledge, diagnostic skills, and professional competencies in Chemical Pathology.

I. Lectures

Formal teaching sessions that provide foundational and advanced theoretical knowledge in pathology, including disease mechanisms, classification systems, and diagnostic criteria.

II. Case Presentations

Trainees present selected cases to peers and supervisors, enhancing understanding of disease processes, diagnostic reasoning, and communication skills.

III. Case Discussion

Interactive discussions of clinical cases focusing on clinicopathological correlation, differential diagnosis, and decision-making.

IV. Journal club sessions

Critical appraisal of current scientific literature to develop evidence-based practice, analytical thinking, and research literacy.

V. Clinical laboratory work

Hands-on participation in routine laboratory activities, including screening of test requests, result verification, interpretative commenting and basic troubleshooting.

VI. Mini seminars

Short, focused presentations by trainees on specific pathology topics to reinforce knowledge acquisition and presentation skills.

VII. Case reporting

Preparation and documentation of pathology reports, fostering accuracy, clarity, and diagnostic competency.

VIII. Multidisciplinary Team Meetings (MDT)

Participation in MDT discussions integrating pathological findings with clinical and radiological information to support patient management.

IX. Intensive courses

Structured teaching blocks designed to consolidate knowledge in key areas and prepare Trainees for examinations.

X. Clinicopathological conferences

Formal case-based sessions emphasising correlation between clinical presentation, pathological findings, and final diagnosis.

XI. Self-directed learning

Independent study and literature review to promote lifelong learning and continuous professional development.

XII. Research discussion and presentation

Regular meetings with supervisors to discuss research progress, methodology, and findings, culminating in formal presentations.

XIII. Case Reviews

Systematic review of selected cases with supervisors to reinforce diagnostic accuracy and reflective learning

6. TRAINING REQUIREMENT

The training requirements ensure that trainees achieve the necessary clinical exposure, competency, and professional development throughout the programme.

Trainees are required to:

- Maintain an up-to-date logbook documenting clinical cases, procedures, and competencies, verified by supervisors.
- Compile a trainee portfolio including workplace- based assessment (WPBA) records, feedback and academic activities.
- Complete a supervised research project, including proposal, data collection, analysis, and final report in Stage 2 of programme.
- Participate actively in Continuous Medical Education (CME) activities such as seminars, journal clubs, and workshops.
- Undertake elective postings (where applicable) to broaden clinical and laboratory exposure.

Compliance with these requirements is monitored through regular review by supervisors and programme coordinators, and is essential for progression to the next stage of training.

7. PROGRESSION CRITERIA(S)

Progression within the Doctor of Chemical Pathology programme is based on a comprehensive evaluation of the trainee's performance, competency, and professional development at each stage of training.

Trainees are required to demonstrate satisfactory completion of training requirements. Competency in core diagnostic skills and laboratory practices must be achieved and verified through continuous assessment and supervisor evaluation.

In summary, trainees must demonstrate*:

- Satisfactory completion of training requirements and attendance
- Verified competency in core diagnostic skills
- Satisfactory progress in research activities in Stage 2
- Positive supervisor recommendation
- Successful completion of summative examination (where applicable)

*Final decisions are made through a departmental review to ensure trainees meet the expected standards.

8. ASSESSMENT FRAMEWORK

Formative (continuous) assessments

Continuous trainees' assessment will be conducted using workplace-based assessment (WPBA). WPBA that will be used in Stage 1 will include Direct Observation of Procedural Skills (DOPS), Case-Based Discussion (CBD), Evaluation of Clinical Events (ECE), and Multisource Feedback (MSF). This is a structured and comprehensive evaluation approach designed to assess the practical skills, competencies, and professional behaviours of trainees in their actual working environment. It involves direct observation and feedback on day-to-day activities, ensuring that trainees are meeting the required standards for the profession. All trainees will be provided with appropriate information about the frequency, methods and criteria of the assessments at the beginning of the semester.

Summative assessments

Summative assessment is conducted at the end of each training stage to evaluate overall competency and readiness for progression.

- **Part I Examination (Year 1):** Assesses foundational knowledge and basic practical skills across core pathology disciplines through theory and practical components.
- **Part II Examination (Year 4):** Final exit examination assessing advanced diagnostic competence, clinical reasoning, and readiness for independent specialist practice.

Details of summative assessment are further elaborated in the following sections.

9. METHOD OF ASSESSMENT

The workplace-based assessment (WPBA) tools employed in the programme include Direct Observation of Procedural Skills (DOPS), Evaluation of Clinical Events (ECE), Case-Based Discussion (CBD), and Multisource Feedback (MSF). These assessment methods are applied longitudinally throughout the training period to evaluate trainees' performance in real clinical and laboratory practice. The assessment tools and their respective descriptions are summarised in the table below.

Assessment Tool	Description
DOPS	Direct observation of specimen handling, grossing and procedural skills
CBD	Case-based discussion evaluating diagnostic reasoning
ECE	Evaluation of clinical events
MSF	Multisource feedback from clinicians, technologists and peers
Logbook	Documentation of cases reviewed, results verification, investigations performed, procedures undertaken, and supervisor verification.
Supervisor Progress Report	Continuous workplace-based evaluation

Below is a table outlining the minimum number of assessments that must be fulfilled during the 4-year programme.

No	Type of assessments	Stage 1		Stage 2					
		Year One		Year Two		Year Three		Year Four	
		Sem 1	***Sem 2***	***Sem 3***	***Sem 4***	***Sem 5***	***Sem 6***	***Sem 7***	***Sem 8***
1.	DOPS	1		1	1	1	1	1	1
2.	CBD	1		1	1	1	1	1	1
3.	MSF					1		1	
4.	Research course forms			1	1	1	1	1	1
5.	PPD forms	1	1	1	1	1	1	1	1

10. COURSE OBJECTIVE, STRUCTURE, LEARNING OUTCOMES, TEACHING DELIVERY AND ASSESSMENT - STAGE 1 (YEAR 1)

Specific Objectives

By the end of Year 1, trainees should be able to:

I. acquire basic theoretical knowledge in pathology.
II. acquire basic practical competence in laboratory procedures.
III. interpret common laboratory tests.
IV. acquire basic knowledge in laboratory management, including laboratory organisation, quality control, and laboratory safety.

Trainees shall undertake rotational postings (minor) in the four main pathology disciplines, with each posting of 4 weeks' duration. These disciplines are Anatomic Pathology, Haematology, Chemical Pathology, and Medical Microbiology. After completion of the minor posting, trainees shall proceed to the monodisciplinary modules of chemical pathology.

An orientation course will be held at the beginning of the academic year, followed by an intensive course during the training year. Throughout the postings, trainees are required to maintain a logbook and a trainee portfolio, and to complete the required procedures to the supervisor's recommendation, in accordance with the student dossier and relevant workplace-based assessment (WPBA) requirements.

Teaching Delivery in Stage 1

I. Student–teacher ratio

Within the programme, the student–teacher ratio is maintained at 1:4 to ensure that trainees receive individualised guidance and support throughout their training.

II. Syllabus of the curriculum / Buku Panduan Program

Please refer to the programme syllabus for detailed information on the curriculum.

III. Course registration

Trainees are required to register for the designated courses in both Semester 1 and Semester 2 of the academic year. Registration will be conducted online and must be completed within the stipulated timeframe.

IV. Structured learning opportunities

These include lectures and seminars as formal teaching sessions, together with dry and wet laboratory practical sessions and other supervised clinical or laboratory-based learning activities.

V. Hands-on training

Trainees will actively participate in supervised laboratory activities to develop practical skills and competency in relevant areas of pathology practice.

VI. Supervision and monitoring of trainees' progress

In Year 1, each trainee will be assigned an academic supervisor who will provide guidance and support throughout the four-year training period. Regular meetings between the supervisor and trainee will be conducted to review academic performance and training requirements. At the end of each semester, trainees' performance and progress will be evaluated and discussed at a programme management meeting to ensure that the required milestones and objectives are being achieved.

VII. Logbooks

Trainees are required to fulfil the requirements outlined in the logbooks provided. Progress in logbook completion will be monitored regularly by the programme coordinator, science officers, and academic staff.

VIII. Workplace-Based Assessment (WPBA) record

Trainees must complete a minimum of one DOPS and one CBD assessment as part of the WPBA requirements.

IX. Progression evaluation

Performance evaluation for progression to the next level of training will be conducted at the end of Semester 2 (see Progression Criteria).

X. Requirement for progression to Year 2

Trainees must fulfil the requirements to sit for the Part I Examination and must pass the examination in order to proceed to Year 2 of training.

Framework of Teaching-Learning Time in Stage 1

Semester	Course Code	Course Name	Duration (weeks)	Remarks
1	FFPM6113	Prinsip Mikrobiologi Perubatan	4	Minor / Foundation Posting
	FFPH6213	Prinsip Hematologi	4	Minor / Foundation Posting
	FFPA6313	Prinsip Patologi Anatomik	4	Minor / Foundation Posting
	FFPK6413	Prinsip Patologi Kimia	4	Minor / Foundation Posting
	FFFQ6611	Pembangunan Personal dan Profesional I	Throughout Semester 1	—
	FFPK6517	Teras Patologi Kimia I	10	Major Posting
2	FFFQ6621	Pembangunan Personal dan Profesional II	Throughout Semester 2	—
	FFPK612J	Teras Patologi Kimia II	22	Major Posting 2
	—	Kursus Intensif	2	Date is subject to approval by the relevant University authority
	—	Study Leave	1	Subject to the approved date of the Part I Examination.
	—	Part I Examination	1	Date is subject to Faculty and Senate approval.

Course Structure for Minor/Foundation and Major Postings in Stage 1

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
Year 1 Semester 1						
1.	FFPM6113	Patologi Umum (Mikrobiologi Perubatan)	3	1. Describe the basic principles for diagnosis, antimicrobial treatment, prevention, and control of infectious diseases. 2. Demonstrate skills in interpreting basic laboratory tests for the diagnosis of infectious diseases.	Kuliah, Tutorial, Praktikal, Demonstrasi makmal	DOPS, Quiz
2.	FFPH6213	Prinsip Hematologi / Principles of Haematology	3	1. Describe the basic principles for diagnosis and treatment of haematological diseases and transfusion medicine. 2. Interpret basic laboratory tests for the diagnosis of haematological diseases and transfusion medicine.	Project, practical sessions	ECE, DOPS

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
3.	FFPA6313	Prinsip Patologi Anatomik	3	1. Describe the principles of diseases in anatomic pathology. 2. Demonstrate skills in interpreting basic laboratory tests in anatomic pathology.	Lectures, case presentations, journal clubs	ECE, DOPS
4.	FFPK 6413	Prinsip Patologi Kimia	3	1. Describe the basic principles of clinical biochemistry for the diagnosis and monitoring of human diseases. 2. Demonstrate skills in interpreting basic laboratory tests of basic routine and specialised chemical pathology tests.	Tutorials, practical sessions, laboratory demonstrations	CBD, DOPS
5.	FFPK 6517	Teras Patologi Kimia I	7	1. Explain the concept of chemical pathology laboratory management systematically. 2. Classify the work processes of the chemical pathology laboratory specifically. 3. Conduct laboratory practical skills according to chemical pathology laboratory procedure.	Tutorials, case presentations, practical sessions, laboratory demonstrations	CBD, DOPS

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
Year 1 Semester 2						
6.	FFPK 612J	Teras Patologi Kimia II	19	1. Describe the basic principles of quality management of chemical pathology laboratories in a systematic approach. 2. Apply knowledge of physiology, clinical biochemistry and pathophysiology for the purpose of diagnosis and treatment of patients. 3. Interpret the results of chemical pathology laboratory testing systematically. 4. Recommend chemical pathology laboratory testing based on clinical utility.	Tutorials, case studies, practical sessions, laboratory demonstrations, discussions	DOPS, CBD, Exam, case reports

Stage 1 Assessment

Formative (Continuous) Assessment

I. In Stage 1, the trainee is required to maintain a logbook to record all procedures performed and the level of competence achieved. The logbook is to be signed by a medical laboratory technologist, scientific officer (where relevant) or a supervising pathologist.
II. The logbook/final progress report shall be submitted to the Head of the Department of Pathology/Program Coordinator at the end of the last posting in Stage 1.
III. WPBAs and Supervisory reports will also be part of the assessment process. WPBA (DOPs and CBD) provide structured and ongoing feedback on the trainee's academic performance, clinical competence, and areas for improvement. Supervisory reports, completed by the assigned academic supervisor, contribute to the overall evaluation of the trainee's progress and readiness for progression to the next stage of training.
IV. Unsatisfactory performance or non-fulfilment of training requirements of Stage 1 training are grounds for barring a trainee from sitting the Stage I examination.

Summative assessment

<u>Prerequisites for sitting the Part I Summative Examination</u>

To be eligible to sit the Professional Part I Examination, the Trainees must have:

I. Satisfactorily completed all postings in Stage I (Year 1).
II. Fulfil the minimum attendance requirement (at least 85%)
III. Demonstrate satisfactory performance in continuous assessment
IV. Supervisor recommends trainees' readiness for advancement to the next stage of training.

Professional Part I Summative Examination

Part I examination comprises

I. Theory papers
II. Practical papers

The allocation marks in the Part I examination shall be as follows:

I. Theory 50% (Theory 1 = 40% + Theory 2 = 60%)
II. Practical 50%

The breakdown of each theory examination information is as follows:

Theory Component	**Number of questions**		**Duration of theory examination**	**Weightage***
	MCQ*	**Essay**		
Theory 1	20 Single-based answer (SBA) and 20 Extended Match Item (EMI)	-	60 minutes	40%
Theory 2	-	4 short note questions (15 marks each)	120 minutes	60%
*Total of which will then be converted into 50% for theory				

The breakdown of the practical examination is as follows:

Practical	**Component**	**Duration**	**Weightage**
OSPE	Chemical Pathology (20 stations) *Each station carries 10 marks (Total marks=200)	160 minutes *Approximately 8 minutes per station*	50%

Criteria for Passing the Professional Part I Summative Assessment

To pass the Professional Part I Summative Assessment, a candidate must obtain:

I. An overall score of at least 50%; AND

II. A score of more than 50% in each of the theory and practical components.

Repeat Examinations

- A candidate who fails the examination may progress to Stage 2 but need to sit for a repeat Part 1 examination after 6 months (at the end of semester 1, year 2).
- A candidate is permitted a maximum of TWO repeat examinations (Every 6 months – at the end of semester 1, year 2 and at the end of semester 2, year 2) with a total of 3 attempts including the first sit.
- If the candidate did not pass after 3 attempts (including the first sit), the candidate will be dismissed from the programme.

Additional Requirements for Progression to Stage 2 of Training

In addition to passing the Professional Part I Examination, trainees must fulfil the following criteria to be eligible to progress to Stage 2 of training:

Requirement	Criteria	Evidence
Completion of Training Period	The trainee must complete the designated training period of 24 weeks per semester, with a minimum attendance of 85%	Attendance and leave records
Formative Assessment	The trainee must demonstrate satisfactory performance in all required continuous assessments and evaluations	WPBA records and logbook
Departmental Assessment Evaluation	The trainee must obtain a satisfactory evaluation by the department	Minutes of the *Mesyuarat Pemantauan Pelajar* (*Borang Semakan Kemajuan Pelajar*)

11. COURSE OBJECTIVE, STRUCTURE, LEARNING OUTCOMES, TEACHING DELIVERY AND ASSESSMENT FOR STAGE 2 (YEARS 2 -4)

Specific Objectives:

By the end of Stage 2, trainees should be able to:

I. Demonstrate independent clinical reasoning and decision-making in routine as well as complex cases.
II. Demonstrate competence in reporting routine biochemistry results and basic dynamic function tests.
III. Identify and undertake basic troubleshooting for all analytical platforms used in the Chemical Pathology laboratory.
IV. Communicate effectively in multidisciplinary settings.
V. Demonstrate professionalism, leadership, and compliance with laboratory standards.
VI. Conduct and complete a research project.
VII. Demonstrate the ability to build professional networks through scientific conferences and academic workshops.
VIII. Apply the principles of laboratory management and quality assurance.

During Stage 2, trainees undergo structured rotations with increasing levels of diagnostic responsibility. Throughout this stage, trainees are required to maintain a logbook, portfolio, and research records, and to demonstrate competency through Workplace-Based Assessments (WPBA) in accordance with the student dossier.

Teaching Delivery Stage 2

I. Student-Teacher Ratio

The student-teacher ratio is maintained at 1:4 to ensure close supervision and individualised support.

II. Syllabus of the Curriculum / Buku Panduan Program

Details of the curriculum are provided in the programme syllabus. Trainees must register for the required courses in both semesters of each academic year within the specified registration period.

III. Quality Management

Trainees are expected to understand and comply with laboratory quality management requirements, including relevant standards such as MS ISO 15189 and ISO 9000.

IV. Structured Learning Opportunities

These include case presentations, seminars, journal reviews, and small-group discussions to support active learning and deeper understanding.

V. Hands-On Training

Trainees will participate in core Chemical Pathology service activities, including biochemical testing, result interpretation, reporting, dynamic function tests, clinical consultation, and multidisciplinary discussions. They will also be involved in laboratory management, on-call duties where applicable, and QA/QC activities under supervision.

VI. Research Project

Each trainee will be assigned a research supervisor in Year 2. Trainees are required to plan, conduct, and complete a research project or dissertation, which must be submitted at least 2 months before the Professional Part II Examination.

VII. Continuing Medical Education (CME)

Trainees are encouraged to participate actively in CME activities within the department and at other institutions to support ongoing professional development.

VIII. Elective Postings

Trainees may undertake elective postings in relevant laboratory or clinical areas and must submit an evaluation form for each posting completed.

IX. Logbooks and Competency Assessment Records

Trainees must maintain the required logbooks and competency assessment records. These will be monitored regularly by the programme coordinator, science officers, and academic staff.

X. Active Participation in Academic and Management Activities

Trainees are expected to participate in academic teaching and learning activities as well as laboratory management activities. Such participation should be documented in the trainee portfolio.

XI. Supervision

Each trainee will be assigned an academic supervisor throughout the training programme to provide guidance, monitor progress, and support academic development. Where appropriate, the academic supervisor may also serve as the research supervisor.

XII. Workplace-Based Assessment (WPBA)

Stage 2 trainees will continue to be assessed through DOPS, ECE, CBD, and MSF, with greater emphasis on advanced clinical reasoning, diagnostic accuracy, independent practice, and professional behaviour. Ongoing feedback will be provided to support progression and readiness for the Professional Part II Examination.

Framework of Teaching-Learning Time in Stage 2

Year	Semester	Course Code	Course Name	Duration	Remarks
2	1	FFPK6138	Teras Patologi Kimia III	13	-
		FFPK6237	Aplikasi Klinikal Patologi Kimia I	13	-
		FFFQ6631	Pembangunan Personal dan Profesional III	Throughout Semester 1	-
		FFPK6334	Cadangan Penyelidikan	Throughout Semester 1	-
	2	FFPK614A	Teras Patologi Kimia IV	13	-
		FFPK6249	Aplikasi Klinikal Patologi Kimia II	13	-
		FFFQ6641	Pembangunan Personal dan Profesional IV	Throughout Semester 2	-
3	1	FFPK6158	Teras Patologi Kimia V	13	-
		FFPK6257	Aplikasi Klinikal Patologi Kimia III	13	-
		FFFQ6651	Pembangunan Personal dan Profesional V	Throughout Semester 1	-
		FFPK6354	Pengumpulan dan Analisis Data Penyelidikan	Throughout Semester 1	-
	2	FFPK616A	Teras Patologi Kimia VI	13	-
		FFPK6269	Aplikasi Klinikal Patologi Kimia IV	13	-
		FFFQ6661	Pembangunan Personal dan Profesional VI	Throughout Semester 2	-

4	1	FFPK627F	Patologi Kimia Lanjutan I	26	-
		FFFQ6671	Pembangunan Personal dan Profesional VII	Throughout Semester 1	-
		FFPK6174	Penulisan dan Pembentangan Manuskrip Penyelidikan	Throughout Semester 1	-
	2	FFPK618J	Patologi Kimia Lanjutan II	21	-
		FFFQ6681	Pembangunan Personal dan Profesional VIII	Throughout Semester 2	-
		-	Intensive course	2	Date is subject to approval by the relevant University authority
		-	Study Leave	1	Subject to the approved date of the Part II Examination.
		-	Part II Examination	2	Date is subject to Faculty and Senate approval.

Course Structure for Chemical Pathology Module Stage 2

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
Year 2 Semester 1						
1	FFPK6138	Teras Patologi Kimia III	8	1. Elucidate the chemical pathology laboratory organisation systematically. 2. Perform the total quality management system in the chemical pathology laboratory. 3. Evaluation of data variability in chemical pathology.	Tutorial, case studies, practical	CBD, DOPS, presentation
2	FFPK6237	Aplikasi Klinikal Patologi Kimia I	7	1. Describe the core principles of chemical pathology in endocrinology. 2. Explain the methodologies in endocrinology. 3. Interpretation of endocrinology result.	Tutorial, case studies, practical, demonstration	CBD, DOPS, presentation
3	FFPK6334	Cadangan Penyelidikan	4	1. Compile references using digital platforms for the literature review. 2. Prepare a research proposal and budget. 3. Present the research proposal to the ethics committee / relevant academic panel.	Project, discussion	Portfolio, presentation

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
Year 2 Semester 2						
5	FFPK614A	Teras Patologi Kimia IV	10	1. Identify the advantages and limitations of routine and specialised techniques/ tests in chemical pathology. 2. Perform appropriate biochemical tests for the investigation of a specific disease. 3. Describe the mitigation procedures to minimise errors in chemical pathology testing.	Tutorial, case studies, practical, demonstration	CBD, DOPS, presentation
6	FFPK6249	Aplikasi Klinikal Patologi Kimia II	9	1. Describe the core principles of chemical pathology in protein biochemistry. 2. Explain the methodologies in protein biochemistry. 3. Interpret the protein biochemistry result.	Tutorial, case studies, practical, demonstration	CBD, DOPS, presentation

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
Year 3 Semester 1						
8	FFPK6158	Teras Patologi Kimia V	8	1. Describe the laboratory information system in a systematic manner with effective interactive skills. 2. Evaluate data related to method verification in chemical pathology. 3. Interpret the principle of traceability in chemical pathology.	Tutorial, case studies	CBD, presentation
9	FFPK6257	Aplikasi Klinikal Patologi Kimia III	7	1. Describe the core principles of chemical pathology in toxicology. 2. Explain methodologies in toxicology. 3. Interpretation of toxicology results.	Tutorial, case studies, practical, demonstration	CBD, DOPS, presentation
10	FFPK6354	Pengumpulan dan Analisis Data Penyelidikan	4	1. Perform recruitment of subjects for the research project. 2. Perform research based on the proposed methodology. 3. Analysing data based on appropriate statistical analysis.	Project and practical	Report, presentation

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
Year 3 Semester 2						
12	FFPK616A	Teras Patologi Kimia VI	10	1. Describe the optimisation of chemical pathology laboratory methodologies 2. Interpret the interference concept in chemical pathology laboratory. 3. Evaluate data of measurement of uncertainty in chemical pathology by using numerical skills.	Tutorial, case studies	CBD, presentation
13	FFPK6269	Aplikasi Klinikal Patologi Kimia IV	9	1. Describe the core principles of chemical pathology in inborn error metabolism. 2. Explain the methodologies of inborn error metabolism. 3. Interpret test results of inborn error metabolism	Lectures, tutorials, case studies, practical, demonstrations	CBD, DOPS, Case presentation

No.	Course Code	Course Name	Credit	CLO (Course Learning Outcomes)	Method of Delivery	Method of Assessment
Year 4 Semester 1						
15	FFPK627F	Patologi Kimia Lanjutan I	15	1. Describe the principles of laboratory automation in chemical pathology. 2. Demonstrate the principles of point of care (POC) methodology in chemical pathology. 3. Explain the principles of assessment, management of risks and ethics in chemical pathology efficiently.	Tutorial, case studies, discussion	CBD, presentation
16	FFPK6174	Penulisan dan Pembentangan Manuskrip Penyelidikan	4	1. Formulate the research results based on data analysis. 2. Present research results through scientific communication. 3. Write a manuscript for journal publication with minimal supervision.	Project	Manuscript, report, presentation
Year 4 Semester 2						
18	FFPK618J	Patologi Kimia Lanjutan II	19	1. Describe the core concept of chemical pathology laboratory accreditation 2. Adaptation of chemical pathology knowledge in patient care. 3. Practice proper interdepartmental communication in relation to patient management.	Tutorial, case studies, practical, demonstration	Theory examination, practical examination, viva

Stage 2 Assessment

Formative (Continuous) Assessment

Formative assessment in Stage 2 is conducted continuously to monitor the trainee's clinical performance, competency development, and academic progress. Trainees are required to demonstrate satisfactory achievement across the following components:

I. Workplace-Based Assessments (WPBA):
Completion of the required WPBA tools, including Directly Observed Procedural Skills (DOPS), Evaluation of Clinical Encounter (ECE), Case-Based Discussion (CBD), and Multi-Source Feedback (MSF). These assessments should demonstrate progressive improvement in the interpretation of biochemical results, clinical reasoning, consultative practice, laboratory decision-making, and professional behaviour.

II. Logbook:
Maintenance of an up-to-date logbook documenting cases reviewed, interpreted, and reported, including routine and specialised Chemical Pathology investigations. The logbook should reflect an adequate case mix, increasing complexity, and progression towards independent specialist practice.

III. Competency Assessment Records:

Demonstration of competency in key technical and laboratory skills in Chemical Pathology, including result interpretation, dynamic function testing, analytical troubleshooting, quality control review, method verification or validation, and laboratory consultation, as documented in formal competency assessment forms and verified by supervisors.

IV. Research Activities:
Completion of the required research course documentation, including the research proposal, progress reports, and dissertation submission, with evidence of satisfactory progress as evaluated by the research supervisor. Trainees are encouraged to disseminate their research findings through scholarly activities such as manuscript

submission, poster presentation, or oral presentation at scientific meetings, conferences, or academic forums. Evidence of such activities may be included in the trainee portfolio as part of academic development. While dissemination of research findings is strongly encouraged, it is not mandatory for progression. Please also refer to the Guide for Doctor of Chemical Pathology Research Project.

V. Supervisor Reports:
Regular supervisory evaluations confirming satisfactory performance in Chemical Pathology service, professionalism, and readiness for increasing clinical, diagnostic, and laboratory responsibility.

VI. Trainee Portfolio:
Continuous updating of the trainee portfolio with evidence of WPBA, academic activities, reflective learning, research progress, and professional development.

VII. Scholarly Activity:
Submission of at least one case report, case series, or other scholarly work suitable for publication or presentation, demonstrating the trainee's ability to engage in academic writing and contribute to scientific dissemination.

Summative assessment

<u>Prerequisites for Sitting the Professional Part II Summative Examination (Exit Examination)</u>

Trainees are eligible to sit for the Professional Part II Examination (Exit Examination) only upon demonstrating satisfactory progression throughout the training programme. Fulfilment of the following requirements is mandatory for admission to the examination.

To be eligible to sit for the Professional Part II Examination, trainees must have:

I. completed the designated training period of four (4) years.
II. achieved 100% completion of all required Workplace-Based Assessments (WPBA), with performance rated as satisfactory or above.
III. submitted a research project manuscript at the beginning of Year 4, and no later than four (4) months before the Final Examination to the assigned supervisor.

IV. journal evidence submission of the research manuscript to a peer reviewed journal.
V. submitted completed logbooks no later than two (2) months before the Final Examination.
VI. submitted **SIX (6)** case reports to the assigned supervisor; and
VII. completed all required supervisor reports, with a minimum rating of satisfactory performance in each report.

Note: An up-to-date and satisfactory Trainee Portfolio is required. However, this is an additional requirement and not a prerequisite for sitting the Professional Part II Examination.

Professional Part II Examination (Exit Examination)

Trainees are eligible to sit for the Professional Part II Examination (Exit Examination) only if they have demonstrated satisfactory progression throughout the training programme. Fulfilment of the following requirements is mandatory for admission to the examination.

I. Theory papers
II. Practical papers
III. Viva voce

Allocation of Marks

The allocation of marks for the Professional Part II Examination shall be as follows:

Component	Description	Weightage
Theory	Paper I and Paper II: Essays / SEQ	40%
Practical	Practical I and Practical II	40%
Viva voce	Standardised format	10%
Research	Dissertation /manuscript	10%
	Total	**100%**

Criteria for Passing

A candidate must fulfil all of the following requirements to pass the Professional Part II Examination:

I. obtain an overall score of at least 50%.
II. pass both the theory and practical components, with a minimum score of 50% in each component;
III. attend the viva voce, which is compulsory; and
IV. submit the dissertation/manuscript.

*Please also refer to the Evaluation of Research Report Form and Scale Determination in the Guide for Doctor of Chemical Pathology Research Project Supervision.

Repeat Examinations

Candidates who do not meet the required standard in the summative assessment may be allowed to undertake a repeat examination. The timing of the repeat examination shall allow adequate time for remediation and preparation.

A candidate may be allowed to repeat the examination after one (1) year if the candidate:

I. obtains an overall score of less than 50%; or
II. fails both the theory and practical components; or
III. obtains an overall score of 50% or more, but fails either the theory or the practical component, and the Conjoint Examination Board determines that the candidate's overall performance is unsatisfactory.

The allocation of marks for the Professional Part II repeat examination shall be as follows:

Component	Description	Weightage
Theory	Paper I and Paper II: Essays / SEQ	45%
Practical	Practical I and Practical II	45%
Viva voce	Standardised format	10%
	Total	**100%**

Repeat examination after six months

I. A candidate may be allowed to repeat the examination after six months if he has an overall score of 50% or more but has failed either the theory OR the practical component
II. In this repeat examination, the candidate will be examined in the failed component and be given a viva-voce.
III. The student must achieve satisfactory continuous assessment to be eligible to sit for examination.
IV. The candidate is only allowed to repeat examination twice consecutively for the same component (theory or practical).
V. Upon failure of the second repeat attempt, the candidate is required to repeat both theory and practical components after a period of 6 months to 1 year based on conjoint exam board decision.

Repeat examination after one year

A candidate may be allowed to repeat the examination after one (1) year if:

I. obtained an overall score of less than 50% OR
II. failed BOTH the theory and practical components OR
III. an overall score of 50% or more, but has failed either the theory or the practical component and the conjoint exam board found that overall performance of the candidate is not satisfactory.
IV. In this repeat examination, the candidate will be examined in the theory and practical components and be given a viva-voce. The student must achieve satisfactory continuous assessment to be eligible to sit for examination

A candidate is allowed a maximum of **FOUR (4)** repeat examinations.

The maximum duration permitted for completion of the entire programme is **SEVEN (7)** years.

12. GUIDELINE FOR RESEARCH MODULES

Introduction

The research module is a compulsory longitudinal component of the **Doctor of Chemical Pathology** programme. It is intended to develop trainees' competencies in research design, ethical conduct, data management, statistical analysis, scientific writing, and scholarly dissemination. The research training is delivered progressively through three sequential courses in **Stage 2** of the programme.

Overall Objectives of Research Training

The research module aims to enable trainees to:

I. Develop skills in scientific literature review and critical appraisal.
II. Design and implement a clinically relevant research project in anatomical pathology.
III. Apply appropriate research methodologies and statistical analysis.
IV. Produce a manuscript suitable for submission to a peer-reviewed journal.
V. Present research findings to scientific and academic audiences.

Responsibilities of Trainees

Trainees are expected to:

I. identify a relevant research topic in Chemical Pathology;
II. conduct a literature search using appropriate scientific databases;
III. prepare a research proposal with a suitable methodology;
IV. obtain ethical approval before starting data collection;
V. collect, manage, and analyse research data responsibly;
VI. present research progress and findings at departmental or scientific meetings;
VII. submit the required dissertation or manuscript; and
VIII. maintain proper research documentation, including progress reports and supporting records.

Responsibilities of Supervisors

Supervisors are responsible for:

I. providing academic guidance and research mentorship;
II. advising on the research question, methodology, and study design;
III. ensuring the study is scientifically and ethically appropriate;
IV. monitoring trainee progress through regular meetings;
V. reviewing the proposal, analysis, and manuscript drafts; and
VI. confirming that trainees meet the required milestones and deadlines.

Supervision

Each trainee must have a primary supervisor and, where applicable, a co-supervisor. For trainees conducting research in external institutions, an additional research supervisor may be appointed if necessary. Regular meetings should be held to monitor progress, and written progress documentation must be maintained.

Ethics Requirements

Ethical approval is mandatory for all research projects. Trainees must comply with institutional research and ethics requirements before, during, and after the study. No data collection may begin until approval has been obtained. Confidentiality and data security must be maintained at all times.

Data Management

Trainees must maintain the following documentation, including other relevant records where applicable, and ensure that all materials are handled privately and confidentially.

I. Sample collection log
II. Data collection records
III. Statistical analysis outputs
IV. Progress Report forms (see appendix)
V. Draft manuscript sections

Statistical Analysis

Trainees are expected to use appropriate statistical tools based on the research question, study design, and type of data. Commonly used approaches include descriptive statistics, comparative analysis, correlation, and regression analysis where applicable.

Assessment

Assessment of the research module is based on continuous progress and final outputs. This includes supervisor reports, progress documentation, research presentations, and evaluation of the final dissertation or manuscript. The research dissertation contributes to the final examination marks in accordance with programme requirements.

Final Output of Research

The final output of the research module shall include the dissemination of the trainee's research findings through scholarly activity. As a requirement for graduation from the programme, each trainee must fulfil at least one of the following:

I. **present the research findings at a scientific conference**, either as an oral or poster presentation; or
II. **publish or submit a research article** to a peer-reviewed journal.

The research component shall contribute 10% of the overall mark for the Professional Part II Examination. Assessment of the dissertation or manuscript shall be conducted in accordance with the approved evaluation process, and the resulting mark shall be incorporated into the final Part II examination score.

Course Structure of the Research Module

No.	Course Code	Course Name	Credit hours	CLO (Course Learning Outcomes)
Year 2, Semester 1				
1	FFPK6334	Cadangan Penyelidikan	4	1. Compile references using digital platforms for the literature review. 2. Prepare a research proposal and budget. 3. Present the research proposal to the ethics committee / relevant academic panel.
Year 3, Semester 1				
2	FFPK6354	Pengumpulan dan Analisis Data Penyelidikan	4	1. Collect research data systematically. 2. Analyse research data appropriately. 3. Present and interpret research findings.
Year 4, Semester 1				
3	FFPK6174	Penulisan dan Pembentangan Manuskrip Penyelidikan	4	1. Prepare a research manuscript for academic submission. 2. Present research findings effectively. 3. Demonstrate scholarly writing and scientific communication skills.

Research Progress and Method of Assessment

Course Code / Name	**Course Focus**	**Key Milestones**	**Expected Outputs**	**Method of Assessment**
FFPK6334 (Cadangan Penyelidikan)	Development of a well-structured research proposal based on current scientific evidence, including literature review, topic refinement, formulation of objectives, methodology preparation, budget estimation where relevant, proposal presentation, and ethics submission	● Topic confirmation ● Completion of literature review ● Proposal draft submission ● Departmental presentation ● Ethics committee submission	● Literature review summary ● Research proposal document ● Proposal presentation slides ● Revised proposal following departmental feedback ● Ethics submission documents	Portfolio, presentation
FFPK6354 (Pengumpulan dan Analisis Data Penyelidikan)	Implementation of the approved research project and appropriate analysis of collected data, including data collection, organisation of research records, interpretation of results, and statistical analysis	● Conduct a study according to the approved methodology after ethical approval	● Ethical approval documentation ● Data collection records ● Research progress reports ● Statistical analysis outputs ● Draft results section	Report, presentation

FFPK6174 (Penulisan dan Pembentangan Manuskrip Penyelidikan)	Scientific writing, presentation, and dissemination of research findings, including literature update, final interpretation of results, and preparation of dissertation or manuscript	● Presentation of findings to an academic audience ● Manuscript submission (strongly encouraged)	● Updated literature review; final interpretation of results ● Complete dissertation or manuscript ● Research presentation ● Manuscript submission	Manuscript, report, presentation

13. GUIDELINE FOR PERSONAL AND PROFESSIONAL DEVELOPMENT (PPD) MODULES

No	Course Code	Course Name	CLO (Course Learning Outcomes)	Credit	Method of Delivery	Method of Assessment
Year 1						
1.	FFFQ6611	Pembangunan Personal & Profesional I	To analyse the best practices in decision-making based on current and relevant theories, respecting the diversity of individuals involved in the process.	1	Seminars, forums, self-learning packages	Supervisor's report
2.	FFFQ6621	Pembangunan Personal & Profesional II	To incorporate the correct ethical and moral values required in the development of interpersonal capability with regard to treating patients and supporting members of the team.			
Year 2						
3.	FFFQ6631	Pembangunan Personal & Profesional III	Implement safe and appropriate practical skills according to medical and health regulations when treating patients.			
4.	FFFQ6641	Pembangunan Personal & Profesional IV	To practice the ethics and professionalism required when treating patients according to the code of professional conduct in medicine.			

No	Course Code	Course Name	CLO (Course Learning Outcomes)	Credit	Method of Delivery	Method of Assessment
Year 3				1	Seminars, forums, self-learning packages	Supervisor's report
5.	FFFQ6651	Pembangunan Personal & Profesional V	To demonstrate effective communication, with empathy and a high standard of professionalism at all times, whilst managing patients, their families and all relevant parties.			
6.	FFFQ6661	Pembangunan Personal & Profesional VI	To lead others in the team towards best practices for care of patients and continue to lead themselves through lifelong learning.			
Year 4						
7.	FFFQ6671	Pembangunan Personal & Profesional VII	To apply safe digital practices and current technology, and ensure best practices in medicine.			
8.	FFFQ6681	Pembangunan Personal & Profesional VIII	Safely and accurately evaluate the medical data of patients and perform standard risk assessment of the situation.			

14. LIST OF RECOMMENDED MATERIALS AND RESOURCES

Anatomic Pathology	1) Robbins & Cotran. Pathologic Basis of Disease 10th Edition (Published date May 2020) 2) Wheater's Basic Pathology: A Text, Atlas and Review of Histopathology by Geraldine O'Dowd (latest edition) @ Wheater's Basic Histopathology by Alan Stevens. James S. Lowe, Barbara Young., 6th edition, 2014 3) Theory and Practice of Histological Techniques. Bancroft JD and Stevens A.. Churchill Livingstone., 7th edition, 2013 4) The Practice of Surgical Pathology: A beginners's guide to the diagnostic process by Diana Weedman Molavi, 2008 5) Rosai and Ackerman's Surgical Pathology. 11th edition. Elsevier (2017). 6) Lester, Susan C. Manual of Surgical Pathology. Third ed.: Mosby, 2010 7) WHO Classification of Tumour Series
Hematology	1) Victor Hoffbrand, Paresh Vyas, Elias Campo, Torsten Haferlach, Keith Gomez. 2019. Color Atlas of Clinical Hematology: Molecular and Cellular Basis of Disease. 5th Edition. Wiley. 2) B. J. Bain, I. Bates and M. A. Laffan. 2017. Dacie and Lewis Practical Haematology. 12th Edition. Elsevier. 3) Denise M. Harmening. 2012. Modern Blood Banking and Transfusion Practices. 6th Edition. F.A Davis Co 4) Michael F. Murphy, David J Roberts. 2017. Practical Transfusion Medicine. 5th Edition. Wiley. 5) Pettit JE, Moss P and Hoffbrand AV. 2007. Essential Haematology. 5th Edition. Blackwell Scientific
Chemical Pathology	1) Marshall, W. J., Lapsley, M., Day, A., & Shipman, K. (2025). *Clinical chemistry* (10th ed.). Elsevier. ISBN: 9780443283895 2) Day, A., & Mayne, P. D. (1994). *Clinical chemistry in diagnosis and treatment* (6th ed.). Taylor & Francis. ISBN: 9780340576472 3) Rifai, N. (Ed.). (2022). *Tietz textbook of laboratory medicine* (7th ed.). Elsevier. ISBN: 9780323775724 4) Kaplan, L. A., & Pesce, A. J. (Eds.). (2010). *Clinical chemistry: Theory, analysis, correlation* (5th ed.). Mosby/Elsevier. ISBN: 9780323036580

	5) Rifai, N. (2024). *Tietz fundamentals of clinical chemistry and molecular diagnostics* (9th ed.). Elsevier. ISBN: 9780323935838 6) Walmsley, R. N., Watkinson, L. R., & Cain, H. J. (1999). *Cases in chemical pathology: A diagnostic approach* (4th ed.). World Scientific. ISBN: 9789810240356 7) Bishop, M. L., Fody, E. P., Van Siclen, C., & Mistler, J. M. (2022). *Clinical chemistry: Principles, techniques, and correlations* (9th ed.). Jones & Bartlett Learning. ISBN: 9781284238860 8) McPherson, R. A., & Pincus, M. R. (Eds.). (2021). *Henry's clinical diagnosis and management by laboratory methods* (24th ed.). Elsevier. ISBN: 9780323673204 9) Laposata, M. (2025). *Laposata's laboratory medicine: Diagnosis of disease in the clinical laboratory* (4th ed.). McGraw Hill. ISBN: 9781264258093 10) Price, C. P., & Christenson, R. H. (Eds.). (2007). *Evidence-based laboratory medicine: Principles, practice, and outcomes* (2nd ed.). AACC Press. ISBN: 9781594250712
Medical Microbiology	1) Cotran RS, Kumar V, Robbins SL, 2015: Robbin's Pathologic Basis of Disease. 9th Edition, Elsevier Saunders. 2) Fiona Roberts Elaine MacDuff . 2018. Pathology Illustrated. 8th Edition. Churchill Livingstone. 3) Richard V Goering, Hazel M Dockrell, Mack Zuckerman, Derek Wakelin, Ivan Roitt, Cedric Mims, Peter L Chiodini, 2018. Mims' Medical Microbiology. 6th Edition. Elsevier Saunders. 4) Fatmah Md. Salleh, Norhayati Moktar, Tengku Shahrul Anuar Tengku Ahmad Basri & Azlin Mohd. Yasin. 2016. Practical Guide to Laboratory Techniques in Medical Parasitology. Bangi: Penerbit UKM. 5) Noor Hayati Mohd Isa & Karis Misiran. 2015. Colour Atlas on Medical Parasitology. Shah Alam: UiTM Press. 6) Paniker, C.K. Jayaram (Author) & Sougata Ghosh (Editor). 2017. Paniker's Textbook of Medical Parasitology. Edisi ke-8. New Delhi: Jaypee Brothers Medical Publishers.

	7) Sherris, J.C. 2010 (Ed). Sherris Medical Microbiology. An Introduction to Infectious Diseases. 5rd Edition. USA: McGraw-Hill Professional.
Personal and Professional Development	1) Jonathan Herring. 2016. Medical Law and Ethics. Oxford: Oxford University Press. 2) Peter Tate, Francesca Frame. 2020. The Doctor's Communication Handbook 8th edition. CRC Press Taylor & Francis Group. 3) World Medical Association, Williams John Reynold. 2015. Medical ethics manual. World Health Communication Associates, UK. 4) Blake T, Whallett A.2016. Leadership and the medical registrar: how can organisations support these unsung heroes? Postgraduate Medical Journal; 92:735-740. 5) Malaysian Medical Council 2019. Code of Professional Conduct. https://mmc.gov.my/wp-content/uploads/2019/12/CODE-OF-PROFESSIONAL-CONDUCT-2019-Amended-Version.pdf

15. ROLES & RESPONSIBILITIES OF TRAINEES

I. Registration

Register within the prescribed period.

Complete course registration in every semester.

II. Orientation and Familiarisation

Attend the orientation programme.

Be familiar with the programme structure, curriculum, and policies.

III. Academic Responsibilities

Attend all scheduled teaching and learning activities.

Complete all assignments and assessments on time.

Maintain academic integrity and ethical conduct.

Work with the assigned academic supervisor and research supervisor, where applicable.

IV. Laboratory and Clinical Training

Participate actively in laboratory and clinical training.

Comply with safety procedures and professional standards.

Undergo continuous performance monitoring.

V. Continuing Medical Education (CME)

Participate in workshops, seminars, and conferences.

Engage in lifelong learning and professional development.

VI. Professionalism and Ethics

Maintain professionalism, integrity, and accountability.

Observe patient confidentiality and ethical practice.

VII. Progress Monitoring

Attend scheduled progress review meetings.

Maintain regular engagement with supervisors.

VIII. Completion of Programme Requirements

Complete all required logbooks, postings, research activities, case reports, and dissertation requirements, where applicable.

Failure to fulfil programme requirements may result in being barred from the relevant examination.

IX. Postgraduate Professional Development

Continue professional development and involvement in research or scholarly activities after graduation.

X. Alumni Engagement

Maintain links with the programme and contribute to alumni or academic activities where appropriate.

16. REGULATIONS AND MONITORING

This section outlines the administrative policies governing trainee conduct, registration, progression, and welfare throughout the programme. Trainees are required to comply with the regulations of Universiti Kebangsaan Malaysia (UKM) to ensure proper progression and adherence to institutional requirements.

Section	Policy	Key Requirements / Notes
Leave Entitlements	Vacation / Annual Leave	• 14 days per semester (28 days per year)
	Sick Leave	• 14 days per year
Registration	Semester Registration	• Mandatory for all new and continuing trainees- Must be completed within the prescribed university period
	Late Registration	• Failure to register within 4 weeks may result in a dismissed status • Appeal is permitted for a maximum of 2 consecutive semesters • Subject to processing fee and late registration fine
Deferment of Programme	Eligibility and Application	• Permitted only for valid reasons- Written application with supporting documents is required- Approval by the Head of Department and Dean / Deputy Dean is required
	Duration	• Maximum deferment: 2 semesters (12 months) • Deferment exceeding 12 months requires Senate approval • Deferment period is not counted as part of the study duration
	Responsibility	• Trainee must inform the sponsor, where applicable (e.g. Ministry of Health Malaysia)
Withdrawal from Programme	Process	• Written notice and completed withdrawal form must be submitted • Approval by the Head of Department and Dean / Deputy

		Dean is required
	Responsibility	• Trainee must inform the sponsor, where applicable
Dismissal of Trainees	Grounds for Dismissal	• Submission of false information during admission or study period • Certified mental or physical unfitness affecting training • Unsatisfactory academic performance • Exceeding the maximum study duration
	Disciplinary Action	• Subject to UKM regulations • Includes misconduct such as harassment, improper contact with examiners, and research misconduct
Appeal	Right to Appeal	• Permitted under the UKM Regulations for Graduate Studies 2021 (Part VII) • Must follow the prescribed appeal procedures
Disabilities	Declaration and Support	• Trainees are encouraged to declare any relevant disability or medical condition early • This allows appropriate academic support and accommodation to be considered

17. SUPPORT SERVICES

Type of Support	Description
Academic and Training Support	Trainees are supported through academic supervision, mentorship, regular feedback, case discussions, and progress reviews. Learning is further supported by access to teaching materials, digital platforms, online databases, and library resources.
Research Support and Facilities	Research support includes access to laboratories, research methodology guidance, statistical support, workshops, and assistance with ethical approval, data management, and manuscript preparation.
Counselling and Psychological Support	Confidential counselling services are available to support trainees facing personal, emotional, or psychological challenges. These services aim to promote mental well-being, resilience, and a healthy work–life balance.
Clinical and Professional Development Support	Trainees are encouraged to participate in workshops, seminars, multidisciplinary meetings, and continuing medical education activities to strengthen clinical competence, communication, and professional practice.
Student Representation and Welfare	The Student Representative Council (Majlis Perwakilan Pelajar, MPP) - PSIFER (Persatuan Siswazah Fakulti Perubatan) and programme-level trainee representatives provide channels for communication between trainees and the faculty, and support trainee welfare and engagement.
Administrative and Logistical Support	Administrative support is provided for registration, scheduling, examination matters, and access to institutional systems such as CHETS and e-learning platforms.