

## **REGULATIONS FOR THE POSTGRADUATE DIPLOMA IN MOLECULAR AND DIAGNOSTIC PATHOLOGY (PDipMDPath)**

*(See also General Regulations)*

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### **M129 Admission requirements**

To be eligible for admission to the courses leading to the Postgraduate Diploma in Molecular and Diagnostic Pathology, a candidate shall:

- (a) comply with the General Regulations; and
- (b) hold a Bachelor's degree with honors or a degree of MBBS of this University, or another qualification of equivalent standard from this University, or from another University or comparable institution accepted for this purpose; and
- (c) satisfy the examiners in a qualifying examination, if required.

Advanced standing, up to a maximum of three modules, for the Postgraduate Diploma in Molecular and Diagnostic Pathology may be granted to a candidate who has successfully completed the PCMDPath; subject to the condition that the application is received for not more than two years after successful completion of the PCMDPath.

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### **M130 Award of diploma**

To be eligible for the award of the Postgraduate Diploma in Molecular and Diagnostic Pathology, a candidate shall

- (a) comply with the General Regulations; and
- (b) complete the curriculum and satisfy the examiners in accordance with the regulations set out below.

A candidate who exits the programme after having successfully completed a minimum of 88 hours of the coursework component which includes two Molecular Pathology modules and one Diagnostic Pathology module may be considered for the award of a Postgraduate Certificate in Molecular and Diagnostic Pathology.

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### **M131 Length of curriculum**

The curriculum shall last for two years on a part-time basis, with 200 hours of prescribed work. The maximum period of study should not exceed four years. For candidates with advanced standing, the maximum period of study should not exceed two years.

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### **M132 Completion of curriculum**

To complete the curriculum, a candidate shall:

- (a) follow instructions in the syllabuses prescribed for the below tracks and complete satisfactorily all required written or practical work;
  - (i) Project Track: three Molecular Pathology Modules, two Diagnostic Pathology Modules and a project report; or
  - (ii) Course Track: five Molecular Pathology Modules and two Diagnostic Pathology Modules; and

- (b) satisfy the examiners in the course by continuous assessments and by examinations at the end of each module of the teaching programme.

A candidate who fails to fulfil the requirements within the prescribed maximum period of study shall be recommended for discontinuation under the provision of General Regulation G12, except that a candidate who is unable because of illness or circumstances beyond his/her control to complete the requirements within the prescribed maximum period of study, may apply to the Board of Studies for permission to extend his/her period of studies.

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### **M133 Examinations**

- (a) A candidate who has failed to satisfy the examiners in any part of the examinations may be permitted
    - (i) To attend a supplementary examination; or
    - (ii) To repeat the course(s) and to re-take the prescribed examination(s); or
    - (iii) To re-submit a project report.
  - (b) A candidate who has failed to satisfy the examiners in the examination of the project report, but has satisfactorily completed the prescribed work, may be permitted to resubmit the project report and to re-present it within a specified period of time.
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### **M134 Examination results**

At the conclusion of the examination, the candidates will be notified of the examination result. A candidate who has shown exceptional merit at the whole examination may be awarded a mark of distinction and this mark shall be recorded in the candidate's transcript.

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## **SYLLABUSES FOR THE POSTGRADUATE DIPLOMA IN MOLECULAR AND DIAGNOSTIC PATHOLOGY (PDipMDPath)**

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Students are required to choose one of the two tracks below:

### Project Track

The curriculum comprises 1) lectures (86 hours), 2) tutorial/case studies/practical (36 hours), 3) self-assessment exercises (30 hours) and 4) a project with writing up a project report (48 hours).

Candidates should complete three Molecular Pathology Modules and two Diagnostic Pathology Modules with passing of the examination of these modules; and submit a project report which is relevant to the attachment and fulfils the requirements of the examiners.

### Course Track

The curriculum comprises 1) lectures (86 hours), 2) tutorial/case studies/practical (36 hours) and 3) self-assessment exercises (30 hours).

Candidates should complete five Molecular Pathology Modules and two Diagnostic Pathology Modules with passing of the examination of these modules.

PATH6006 and PATH6009 are assessed through coursework assessment (100%) and PATH6008 is assessed through examination (100%). The remaining courses are assessed through examination (60% for Molecular Pathology Modules and 50% for Diagnostic Pathology Modules) and coursework assessment (40% for Molecular Pathology Modules and 50% for Diagnostic Pathology Modules).

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### **PATH6001 Principles and Techniques of Molecular Pathology (24 hours)**

This module will cover the following topics: Introduction to molecular pathology and genetics; Principles of electrophoresis and immunoblotting; Principles of automated DNA sequencing and various methods of genotyping and mutation analysis; Human identity by DNA typing; Principles and applications of Quantitative-PCR; Basic concepts in conventional cytogenetics and molecular cytogenetics; In-situ hybridization techniques (ISH, FISH, CISH, SISH); Principles and applications of flow cytometry; Emerging technologies (epigenetics, gene expression profiling, stem cells); Laboratory management issues in molecular testing.

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### **PATH6002 Clinical Applications of Molecular Testing (24 hours)**

This module provides an overview of the Principles of HPV testing, its clinical relevance and the various methods of genotyping; Hepatitis B virus infection – testing for viral load and HBV DNA mutants detection; Quantification of EBV DNA plasma for EBV associated diseases; BCR/ABL kinase mutation detection for chronic myelogenous leukaemia and related disorders; KRAS mutation detection for colorectal cancer; EGFR mutation in lung cancer; In-situ hybridization tests: EBER; Kappa/Lambda; HER2 amplification in breast cancer; FISH test for early bladder cancer detection; PCR for gene rearrangements and translocations for haematolymphoid malignancies and soft tissue tumors; RET and Menin gene mutation detection for Multiple endocrine neoplasia syndrome; c-kit mutation detection for gastrointestinal stromal tumors; Gene expression profiling for haematolymphoid malignancies; Laboratory management issues in molecular testing.

**PATH6003 Fundamentals of Genetic Testing for Hereditary Disorders (24 hours)**

This course provides a comprehensive introduction to Molecular Genetics; Genetic testing for Thalassaemia; Genetic testing for familial colorectal cancer; Genetic testing for familial breast and ovarian cancer; Molecular genetics in Paediatrics; Molecular genetics in Neurological diseases; Laboratory management issues in molecular testing.

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**PATH6004 Chemical Pathology, Immunology, Diagnostic Haematology and Transfusion Medicine (40 hours)**

This module will cover topics on the Renal and Liver function tests; Cardiac Markers; Tumor markers; Clinical Toxicology; Expanded Newborn Screening; Pharmacogenetics, Drug Safety and Personalized Medicine; Biochemical diagnosis of adrenal disorders; Immunochemistry Tests; Autoantibody Tests; Diagnostic Haematology Test; Transfusion Medicine; Laboratory Management.

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**PATH6005 Essential Anatomical Pathology for Clinicians (40 hours)**

Topics include Haematolymphoid malignancies: relevance of classification; Tumors of the respiratory tract and pleural cavity; Tumors of the Central Nervous System; Urologic oncology; Tumors of the breast; Endocrine tumors; Soft tissue and bone tumors; Tumors of the liver and GI tract; Cytological, histopathological and molecular devices for diagnosis and management of gynaecological pathology; uterine pathology; ovarian tumors and endometriosis; Squamous and glandular lesions of the cervix: cytology and histology; Gestational trophoblastic diseases; Renal biopsy procedure and specimen handling; Interpreting renal biopsies for glomerular, tubular, interstitial and vascular diseases; Classification of lupus nephritis; Banff classification of renal transplant rejection; Glomerular diseases in transplanted kidney; Laboratory management.

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**PATH6006 Project Report (48 hours)**

For the fulfillment of the Diploma course, candidates will need to submit a project report of at least 3000 words based on a clinical and/or laboratory project which should be conducted over a period of at least 3 months within the candidate's own hospital or practice. It should reflect an application of the knowledge acquired from this course. The candidate is expected to design the project related to his work situation and have it conducted from his workplace. The choice of topic for the study should be discussed in advance with an identified supervisor who will give guidance in the writing of the project report.

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**PATH6007 Practical Course in Laboratory Methods (24 hours)**

This course provides practical sessions on Tissue processing, immunohistochemistry and histological analysis; Basic tissue culture techniques and flow cytometry analysis; Extraction methods for DNA, RNA, protein and electrophoresis; and Reverse transcription, polymerase chain reaction, DNA sequencing.

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**PATH6008 Molecular Microbiology and Infectious Diseases Update (40 hours)**

The Molecular Microbiology component includes the following topics:

Clinical application in bacteriology - Bacterial pathogens: typical and atypical, mycobacterium species, MALDI-TOF-MS technology and application, and Molecular approaches for the diagnosis of sepsis, infections of gastrointestinal tract and central nervous system); Clinical application in

virology - Viral pathogens: hepatitis, enteric and respiratory viruses; rapid quantitation of HIV and drug resistance determination; Clinical application in mycology and parasitology - Fungal pathogens, Parasitic pathogens, Limitations and future perspectives of genomic techniques; Clinical applications in epidemiological surveillance and outbreak management - Principles of molecular phylogenetic analysis and molecular typing method, Laboratory and epidemiological considerations for data interpretation and Limitations and future perspectives.

Students are required to attend any of two of the six courses given under the Infectious Disease Update offered by the Department of Microbiology which include the following:

- Infectious disease update and emerging infections
- Infectious disease emergencies, indwelling device and surgical infections
- Common problems in infectious diseases
- Radiology and radionuclide imaging in ID; genitourinary medicine and HIV problems
- Surprises in daily medical practice: tropical diseases in the developed world
- Infections in immunocompromised hosts and common infective problems in general practice

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**PATH6009 Clinical Applications of Genetic Testing in Inherited Diseases and Genetic Counselling (24 hours)**

This course introduces the general principles of cytogenetics, biochemical genetics and molecular genetics in genetic testing and the various laboratory techniques for identification of disease-causing mutations. Through the practical sessions and group discussion, students will learn how to read a laboratory report. Topics will include principles of genetic counselling; ethical and legal aspects; biochemical diagnosis of acute IEM patients; SNP arrays in clinical practice; bioinformatics for mutation reporting; extended newborn screening for metabolic disease; inherited metabolic disease; endocrine disease and neuromuscular disease; neurogenetics and inherited bone disease; pharmacogenetics; constitutional cytogenetics; molecular cytogenetics; next-generation Sequencing – hardware, software and clinical application; practicum: Interpretation of reports; tutorials on inherited cardiac disease, mitochondrial disease, lysosomal storage disease, autistic spectrum disorder. Laboratory visits to genetic laboratories in Hong Kong.

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