

## **REGULATIONS FOR THE DEGREE OF MASTER OF MEDICAL SCIENCES (MMedSc)**

*(See also General Regulations)*

Any publication based on work approved for a higher degree should contain a reference to the effect that the work was submitted to the University of Hong Kong for the award of the degree.

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### **M18 Admission requirements**

To be eligible for admission, a candidate shall:

- (a) possess the relevant necessary requirements which comply with the General Regulations;
  - (b) hold a Bachelor's degree with honours or the degrees of M.B.,B.S. of this University, or another qualification of equivalent standard from this University or from another University or comparable institution accepted for this purpose;
  - (c) obtain a score of 550 or above in the Test of English as a Foreign Language (TOEFL), within two years before submission of the application, if seeking admission on the basis of a qualification from a University or comparable institution outside Hong Kong of which the language of teaching and/or examination is not English; and
  - (d) satisfy the examiners in a qualifying examination if required.
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### **M19 Qualifying examination**

- (a) A qualifying examination may be set to test the candidate's formal academic ability or his ability to follow the courses of study prescribed. It shall consist of one or more written papers or their equivalent and may include a project report.
  - (b) A candidate who is required to satisfy the examiners in a qualifying examination shall not be permitted to register until he has satisfied the examiners in the examination.
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### **M20 Award of degree**

To be eligible for the award of the degree of Master of Medical Sciences a candidate

- (a) shall comply with the General Regulations; and
  - (b) shall complete the curriculum and satisfy the examiners in accordance with the regulations set out below.
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### **M21 Length of curriculum**

The curriculum shall extend over not less than one academic year of full-time study, or an equivalent period of part-time study, with a minimum of 400 hours of prescribed work.

**M22 Completion of curriculum**

To complete the curriculum, a candidate

- (a) shall follow instruction in the syllabuses prescribed for the course and complete satisfactorily all required written, practical or clinical work;
- (b) shall satisfy the examiners in the course by continuous assessments or by written examinations; and
- (c) shall complete and present a satisfactory dissertation on an approved research project.

The examiners may also prescribe an oral examination.

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**M23 Title of dissertation**

The title of the dissertation shall be submitted for approval before the end of the second semester, and the dissertation shall be presented not later than the end of the academic year. The candidate shall submit a statement that the dissertation represents his own work (or in the case of conjoint work, a statement countersigned by his co-worker, which shows his share of the work) undertaken after registration as a candidate for the degree. The examiners may also prescribe an oral or a written examination on the subject of the dissertation.

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**M24 Examinations**

- (a) A candidate who has failed to satisfy the examiners in the written paper but has presented a satisfactory dissertation and has satisfactorily completed the prescribed written and practical work may be permitted to undertake a further period of study in the course of failure and to be re-examined by a specified date not less than two months after the publication of results.
  - (b) A candidate who has presented an unsatisfactory dissertation but has satisfied the examiners in the written paper and has satisfactorily completed the prescribed written and practical work, may be permitted to revise the dissertation and to re-present it within a specified period of not more than four months after receipt of a notice that it is unsatisfactory.
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**M25**

A candidate

- (a) who has failed to satisfy the examiners in the written paper and has presented an unsatisfactory dissertation; or
- (b) who has failed to satisfy the examiners in a second attempt in the written paper or his dissertation

shall be recommended for discontinuation of studies under the provisions of General Regulation G12.

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**M26 Examination results**

At the conclusion of the examination and after presentation of the dissertations, the names of successful candidates shall be published alphabetically.

## SYLLABUS FOR THE MASTER OF MEDICAL SCIENCES PROGRAMME

### A. INDUCTION COURSE

All candidates will be required to attend the following induction course (10 hours):

PHYO6400      *Biomedical Writing for Young Investigators*

Introduction to Biomedical Writing;  
Organising results and discussing them;  
The course web page;  
The IMRAD formula;  
Writing abstracts.

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### B. CORE MODULES

Candidates will be required to take **four** modules (20 hours each) from the following 15 core modules. **At least one module** should be selected **from either of the two main sections**, i.e. Research Methods and Biological Systems.

#### I. RESEARCH METHODS

(1)      PATH6100      *Laboratory Methods and Instrumentation*

Basic concepts in automated DNA sequencing and genotyping;  
Basic concepts in conventional and molecular cytogenetics;  
Human identity by DNA typing;  
Hybridoma technology;  
Immunoassays-ELISA and related methods;  
In-situ hybridisation techniques (ISH, FISH, CISH);  
Principle and applications of flow cytometry;  
Principles of gene therapy;  
Study of tissue morphology-ultrastructural and confocal microscopy;  
Tissue processing and immunohistochemistry.

(2)      CMED6100      *Statistical Methods*

Statistics in clinical practice, measures for location and spread, normal distribution, probability and binomial distribution, logic in statistical inference, significance tests on the means, association, correlation, simple regression analysis, multiple regression, analysis of variance, logistic regression, survival analysis, non-parametric methods, sample size.

(3)      CMED6200      *Epidemiology and Critical Appraisal*

Critical appraisal, meta-analysis and causality;  
Descriptive epidemiology: person, place and time;  
Epidemiology: definitions, uses, concepts of health, disease and risk factors;  
Measurements: rates, proportions, variation, validity and reliability;  
Screening, prevention and evaluation;  
Sources of information and vital statistics;  
Study designs in epidemiology.

**(4) DRAD6100    *Imaging and Clinical Electrophysiological Techniques***

Imaging techniques:  
 Computed tomography;  
 Contrast agents and contrast imaging;  
 EEG and brain mapping, polysomnographic monitoring;  
 Interventional radiology;  
 Magnetic resonance imaging;  
 Nerve conduction, velocity, EMG;  
 Production of X-rays and radiography;  
 Radionuclide imaging;  
 Ultrasound.

**(5) PAED6100    *Clinical Trials Research Methodology***

Clinical trials designs, blinding and placebo effects;  
 Data analysis;  
 Data interpretation and extrapolation;  
 Data processing;  
 Introduction to clinical trials;  
 Protocol writing and review;  
 Reports and publications;  
 Reviews and meta-analysis;  
 Roles of the team members conducting clinical trials;  
 Safety and efficacy parameters.

**(6) BIOC6100    *Practical Bioinformatics***

Access of biological data with Internet services;  
 Algorithms and analysis of sequence comparison data;  
 Bibliographic search using Entrez and Pubmed;  
 Conceptual translation of proteins and protein structure prediction;  
 Contigs, sequence alignment and fragment assembly system;  
 Database searches for medically relevant genes;  
 Displaying and manipulating 3D macromolecule structures;  
 Essential concepts on gene structure and sequence, protein structure and function;  
 Introduction to, and practical exercises with, GCG software;  
 Introduction to integrated genomics and cell biology databases;  
 Introduction to sequence, gene expression, mutation and transgenic databases;  
 Overview of sequence analysis tools;  
 Pattern matching with consensus sequence;  
 Practical exercises with Internet services;  
 Practical exercises with sequence comparison;  
 Predicting membrane and other functional domains of proteins;  
 Sequence motifs;  
 The use of computers in DNA sequencing;  
 The use of Internet in biology and medicine.

**(7) CMED6300    *Evaluation of Health Programmes and Health Economics***

Analysing quantitative and qualitative data;  
 Cost effectiveness and cost benefit evaluation;  
 Critical appraisal exercise and tutorial;  
 Designing questionnaires, experimental and quasi-experimental designs;

Economic evaluation and analysing costs;  
 Framing objectives, quantitative and qualitative approaches to evaluation;  
 Measuring outcomes, survey methods;  
 Principal types of evaluation, including economic evaluation;  
 Sampling, validity and reliability.

(8) CMED6400 *Evidence Based Practice*

Clinical practice guidelines and consensus statements;  
 Critical appraisal of the evidence – diagnosis, therapy and prognosis;  
 EBP and knowledge management in the local health care environment;  
 Searching the evidence-based literature;  
 Summary point-of-care tools such as POEMS and CATs;  
 Systematic reviews and meta-analysis.

(15) SURG6910 *Laboratory Animal Handling and Surgical Techniques*

Audio-visual instruction on animal handling techniques;  
 Basic animal surgical techniques;  
 Common laboratory animal species in the Laboratory Animal Unit;  
 Immunization and bleeding techniques;  
 Laboratory animal models for medical research;  
 Mouse genetics and transgenic technology;  
 Protocols for raising antibodies using live animals;  
 Tissues preparation for immunohistochemical examination;  
 University & Government regulations governing the use of live animals for experimental purposes.

## II. BIOLOGICAL SYSTEMS

(9) PHYO6100 *Cell Biology*

Biology of tumour cells;  
 Cell cycle and cell death;  
 Cell differentiation;  
 Cell surface receptors;  
 Cellular interaction and immune response;  
 Intercellular communication;  
 Intracellular signal transduction;  
 Neural regeneration;  
 Neurotrophic factors;  
 Structure and function of cells.

(10) BIOC6200 *Genes and Gene Functions*

Gene structure, expression and functions of genes, gene linkage, molecular basis of inherited diseases, globin genes and thalassaemia, molecular diagnosis, mapping human disease genes, RFLP analysis, reverse genetics and cloning of human disease genes, the cystic fibrosis gene, molecular basis of cancer, oncogenes and tumour suppressor genes, the human genome project and bioinformatics, functional genomics, molecular basis of immunity, antigen presentation and recognition, gene therapy, bioethics of molecular medicine.

(11) PHYO6200 *Concepts of Human Physiology*

Brain and behaviour;  
General principles of endocrine physiology;  
Homeostasis and concept of control system;  
Motor co-ordination;  
Nutrition and energy balance;  
Physiological signals;  
Respiratory physiology;  
Sensation and perception;  
The heart and the circulatory system;  
The internal environment and regulation of body fluid.

(12) PHAR6100 *Principles of Drug Action*

Drug interactions;  
Immunochemical basis of drug allergy;  
Mechanism of drug resistance;  
Molecular mechanisms of drug-receptor interaction;  
Pharmacogenetic basis of drug idiosyncrasy;  
The adverse effects of drugs and the mechanisms responsible;  
The development of drug tolerance and physical dependence;  
The fate of drugs in the body - their absorption, distribution, excretion and metabolism;  
The theoretical basis of dose-response relations.

(13) BIOC6400 *Working with Genes and Proteins*

Applications of radioisotopes in DNA research: hybridizations;  
Applications of radioisotopes in protein research: protein labelling;  
DNA sequencing technologies and genome projects;  
Gene expression analysis (differential gene expression, cDNA microarray, DNA chips);  
Gene function analysis: Transgenic animal technology and animal cloning;  
Gene function analysis: Yeast two-hybrid system and phage display system;  
Gene mapping, FISH;  
Labelling nucleic acids: radioactive and non-radioactive approaches;  
Manipulation of large DNA fragment, large scale manipulation of genomes;  
Preparation of nucleic acid samples;  
Protein production in different host systems;  
Protein purification and separation – the basics and advances.

(14) CMED6600 *Biological Basis of Common Health Problems*  
(for non-physician only)

Biology and pathophysiology of common diseases including cancer, diseases of the cardiovascular, respiratory, gastrointestinal, neurological, musculoskeletal and reproductive systems, infections and psychiatric diseases; for each selected disease, the following will be included: aetiology and risk factors, pathophysiology and clinical manifestations, pattern and distribution in populations.

## C. SPECIALISED MODULES

In addition, each candidate will be required to take one of the following 39 specialised fields of study.

A total of **six** modules (i.e. total module values = 6) should be selected. At least four must be taken in the Department in which the candidate is based; the remaining two can be taken in another Department but must be related to the chosen specialised field of study.

### DEPARTMENT OF ANAESTHESIOLOGY

#### ANAE6200 *Application of Basic Sciences in Anaesthesiology*

A candidate is required to choose a total of **six** modules (i.e. total module values =6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
1	Anaesthetic pharmacology: To learn basic pharmacology of drugs used in the practice of anaesthesiology; To learn the pharmacokinetic principles of drug administration via intravenous, inhalational and other routes commonly used in the practice of anaesthesiology.
2	Applied cardiovascular physiology and monitoring: To learn principles of cardiovascular physiology which are useful to the practice of anaesthesiology and critical care medicine; To learn techniques and applications of common cardiovascular monitoring useful to the practice of anaesthesiology and critical care medicine.
2	Applied respiratory physiology and monitoring: To learn principles of respiratory physiology which are useful to the practice of anaesthesiology and critical care medicine; To learn techniques and applications of common respiratory monitoring useful to the practice of anaesthesiology and critical care medicine.
2	Pain management: To learn the basic principles and techniques required for the safe practice of acute and chronic pain management.
1	Physics in anaesthesiology: To understand principles of physics as applied to the practice of anaesthesiology and critical care medicine.

**DEPARTMENT OF ANATOMY****ANAT6100**     *Current Topics in Morphological Sciences, Cell Biology and Neuroscience*

A candidate is required to choose a total of **six** modules (i.e. total module values =6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
1	Biotech, proteomics and bio-drug development;
1	Control of cell proliferation and apoptosis;
1	Current techniques for the study of brain research (neurocytology): immunocytochemistry, tracers, in-situ hybridisation, histochemistry, enzyme histochemistry, quantitative microscopy;
1	Current topics in neuroimmunology;
1	Epithelial-mesenchymal interactions;
1	Gross anatomy of specialised anatomical regions;
1	Growth factors;
1	Molecular genetics of cancer;
1	Neurobiology: neurotransmitters in the nervous system;
1	Neuroprotection in glaucoma;
1	Neurotrophic factors in health and disease;
1	Oxidative stress and inflammation in liver injury;
1	Physiopathology and models of neurodegenerative disorders;
1	Preimplantation embryos and artificial reproductive technology.

**DEPARTMENT OF BIOCHEMISTRY****BIOC6300**     *Biochemistry and Molecular Biology*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
2	Advanced biochemistry: Signal transduction, biomodulators, enzyme kinetics, catalytic mechanisms, protein chemistry, post-translational modification of proteins.
2	Biochemistry seminar: Present and attend seminars, criticise, think, write and talk about biochemical issues, organise mini-conferences, technical reviews, research proposals, communication skills, personal and career development.
2	Developmental molecular genetics: Cellular aspects of development, control of gene activity during development, genetic control of morphogenesis, pattern formation, developmental mutants, transgenic mice and functional genomics.



- 2 Molecular biology of the gene:  
Eukaryotic gene regulation, control of gene expression, transcription factors, DNA-protein interaction.
- 2 Practical bioinformatics:  
Computational molecular biology, the use of internet in biology, sequence analysis tools, molecular biology databases, GCG sequence analysis software, pattern matching, sequence motifs, sequence alignment, displaying and manipulating 3D macro-structure.

## CLINICAL TRIALS CENTRE

### PAED6200 *Clinical Trials Research Methodology*

<u>Module Value</u>	<u>Modules</u>
1	Clinical trial protocol, study protocol and quality of life: Clinical trial protocol, essential trial documents, practical site management, ethics committee submissions, quality of life.
1	Critical appraisal and meta-analysis of clinical trials: Medline search, statistics and software for meta-analysis, cochrane collaboration database and project, project and presentation of findings.
1	Ethics, law, contracts, budgets and finance: IRB and ICH GCP, local regulatory requirements/law, contracts and finance, practice in the preparation of a study budget, audits and inspections fraud and misconduct, clinical trial role play.
1	Good clinical practice and study site management: Introduction to good clinical practice, responsibilities of the investigator, responsibilities of the CRC, Institutional Review Board (IRB) and informed consent, drug accountability, audits of the study site, GCP, study site financial and legal aspects of clinical trials, study site operation procedures pre-study SOPs.
1	Statistical practice in clinical trials: Basic concepts of medical statistics, simple data analysis and getting started with SPSS, regression analysis and SPSS practice, non-parametric analysis and SPSS practice, sample size calculation.
1	Study site management practice: Clinical trial protocol review, trial budget estimations, preparation of investigator's CV, IEC/IRB submissions, IEC/IRB review, study site initiation, definition of study team responsibilities, adverse event reporting procedures, study site location visits.

## DEPARTMENT OF COMMUNITY MEDICINE

### CMED6500 *Public Health*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
1	Advanced epidemiological methods: Epidemiological survey design and methods, occupational epidemiology, environmental epidemiology, nutritional epidemiology, molecular and genetic epidemiology, randomised controlled trials, systematic review and meta analysis.
1	Advanced statistical methods I: Analysis of variance and covariance, factor analysis, logistic regression, survival analysis, curve fitting.
1	Advanced statistical methods II: Analysis for count data, analysis for contingency tables, longitudinal data analysis, censored data analysis, survey data analysis.
1	Contemporary issues on ageing and old age: Meanings of 'old' age, approaches to the studies of ageing and old age, theories of ageing and old age, life course perspective, connecting gender and ageing, ageing, health and economics, understanding of the aged, social policies and experience of the aged, development of 'old' age studies.
1	Dental public health: Epidemiology of common dental diseases, application of the principles of public health in dentistry, oral health promotion, prevention of dental diseases and oral health care delivery systems; examples and issues with special interest to Hong Kong will be used in the teaching.
1	Epidemiology of important health problems: Tobacco-related diseases, cancer and chronic disease, infectious disease, lifestyle factors (smoking, alcohol, diet, exercise) and health, pollution and health, accidents and injury, occupational hazards and diseases, psychological factors and health.
1	Health and society: Overview of the field of medical sociology and focus on the basic concepts of health and illness in context including: socio-cultural influence on responses to illness and health care utilisation; social inequalities in health; social institutions and health care; role-relationships between health care professionals and patients; concept of deviance and social control in health and illness; medicalisation and everyday life and political economy and health.

- 1 Health economics:  
Health economics and health care financing, economic evaluation, equity and rationing.
- 1 Health policy:  
Abnormal economics in the health sector;  
Central planning and internal markets (UK);  
Economic analysis and major issues in health policy;  
Managed competition and managed care (US);  
Mandated insurance system with global budget (Germany);  
Medical savings accounts (Singapore);  
Social insurance system with global budget (Canada);  
System structure for the health sector;  
Transformation of market structure and competition (HK).
- 1 Health services management:  
Organisational and management theory, role of operations management including understanding and evaluating operational performance, operational strategy and productivity analysis.
- 1 Medical informatics:  
Theory and practice of electronic medical records; application and benefits of computerized information systems in clinical practice; design, development, implementation and evaluation of computerized clinical information systems; contemporary issues in medical informatics such as privacy, security and confidentiality of computerised health information, patient education.
- 1 Principles and practice of health promotion and health education:  
Concepts of health education and health promotion; health communication; selection and application of different methods of health promotion; the role of legislative, fiscal and other social policy measures in the promotion of health; organisational framework for health promotion at national, international and local level; health inequalities and equity, politics and ethics of health promotion.
- 1 Psychosocial issues in health and illness:  
An integrated seminar course: concepts of health behaviour across the life span, psychosocial impact on health, individual and societal processes in health, legal and ethical issues.
- 1 Quality health care:  
Measurement of clinical quality using process or outcome data;  
Measurement of patient expectations/experience with the health care system;  
Methods and strategies for quality measurement in quality improvement and accountability;  
Nature and causes of variation in quality, variation related to overuse, under use and misuse of services;

Strategies for changing physician and organizational practice;

Traditional quality improvement techniques, regulation, credentialling education, CQI, organisational learning, systems design, managed care, practice guidelines, information systems, performance reports, mediation.

- 1 The practice of public health:  
To promote the application of public health sciences to a wide range of common problems and issues; students will be expected to integrate the diverse knowledge and skill requirements of a competent public health practitioner in their approach to problem solving. Each session will include one or more problems which can be used to illustrate the wide range of disciplines applicable (from an evidence based perspective) to the practice of public health. The module will also support the preparation of candidates for international professional examinations in public health medicine.
- 1 The principles of public health:  
History, concepts and concerns of public health, determinants of health, public health policies, health care systems, measurement of health and needs, public health advocacy, control of disease and health problems, health promotion. The sessions are based on the study of either historical or contemporary global health problems using a wide range of different types and sources of information.

CMED6700 *Administrative Medicine*

A candidate must take the modules listed below.

<u>Module Value</u>	<u>Modules</u>
1	Financial management: Basic concepts: definitions of capital and revenue expenditure, the basic structure of income statements, use of balance sheets, and cash flow statements, the role of internal/external audit, value for money; Budget preparation and budgetary control in Hong Kong; Cost accounting and mechanisms for financial control; Introduction of the concept of a business plan; Introduction to public sector financial management; Roles of directors of finance and others concerned with management of resources; Using financial information to inform decision making, use of endowment funds.
1	Health policy: Abnormal economics in the health sector; Economic analysis and major issues in health policy; Central planning and internal markets (UK); Managed competition and managed care (US);

Mandated insurance system with global budget (Germany);  
 Medical savings accounts (Singapore);  
 Social insurance system with global budget (Canada);  
 System structure for the health sector;  
 Transformation of market structure and competition (HK).

- 1 Health services management:  
 Organisational and management theory, role of operations management including understanding and evaluating operational performance, operational strategy and productivity analysis.
- 1 The practice of administrative medicine:  
 To promote the application of administrative sciences to a wide range of common problems and issues; students will be expected to integrate the diverse knowledge and skills in their approach to problem solving. Each session will include one or more problems which can be used to illustrate the wide range of disciplines applicable (from an evidence based perspective) to the practice of administrative medicine. The module will also support the preparation of candidates for the fellowship examinations in administrative medicine.
- 1 The principles of public health:  
 History, concepts and concerns of public health, determinants of health, public health policies, health care systems, measurement of health and needs, public health advocacy, control of disease and health problems, health promotion. The sessions are based on the study of either historical or contemporary global health problems using a wide range of different types and sources of information.

A candidate must choose **one** of the modules listed below.

- 1 Health economics:  
 Health economics and health care financing, economic evaluation, equity and rationing.
- 1 Psychosocial issues in health and illness:  
 An integrated seminar course: concepts of health behaviour across the life span, psychosocial impact on health, individual and societal processes in health, legal and ethical issues.

CMED6800 *Psycho-Oncology*

Module Value

Modules

- 1 Clinical interpersonal skills:  
 Improving interpersonal skills in asking questions, handling questions and giving information, especially for decision-making, emotions, offering support, breaking bad news, through a series of role-play and other skills training techniques.

- 1 Clinical practicum:  
Ongoing discussion and on-site training in clinical work to link the theoretical aspects of psycho-oncology with direct patient management.
- 1 Fundamental psychosocial aspects of cancer:  
Social support; family as social system, development of life stages of patient/family; gender differences – sexuality; quality of life; psycho-social stages of serious illness; mechanisms of coping and adaptation to process of illness.
- 1 Principles and practices of health promotion and health education, with special emphasis on cancer:  
Concepts of health education and health promotion, health communication, different methods of health promotion; the role of legislative, fiscal and other social policy measures in promoting health; the organizational framework for health promotion at national, international and local levels.
- 1 Psychological aspects in the management of common clinical problems:  
Common problems in cancer treatment, such as nausea, fatigue and depression; evidence-based psychological and nursing approaches to their management, including decision-making, relaxation training, exercise, providing support for individuals, families and groups.
- 1 Terminal illness, palliative care and bereavement:  
Common problems encountered by patients during treatment; evidence-base application for understanding their impact; the role of palliative care approaches and bereavement.

## CLINICAL TRIALS CENTRE AND DEPARTMENT OF COMMUNITY MEDICINE

PAED6800 *Medical Statistics*

<u>Module Value</u>	<u>Modules</u>
1	Advanced epidemiological methods: Epidemiological survey design and methods, occupational epidemiology, environmental epidemiology, nutritional epidemiology, molecular and genetic epidemiology, randomised controlled trials, systematic review and meta analysis.
1	Advanced statistical methods I: Analysis of variance and covariance, factor analysis, logistic regression, survival analysis, curve fitting.
1	Advanced statistical methods II: Analysis for count data, analysis for contingency tables, longitudinal data analysis, censored data analysis, survey data analysis.

- 1 Critical appraisal and meta-analysis of clinical trials:  
Medline search, statistics and software for meta-analysis, cochrane collaboration database and project, project and presentation of findings.
- 1 Statistical practice in clinical trials:  
Basic concepts of medical statistics, simple data analysis and getting started with SPSS, regression analysis and SPSS practice, non-parametric analysis and SPSS practice, sample size calculation.
- 1 Statistical principles for clinical trials:  
Statistical principles for clinical trials (ICH GCP E9), study design considerations, sample size determination, data analysis, analysis of phase I studies, analysis of serial measurements, statistical reporting of clinical trials.

## DEPARTMENT OF MEDICINE

### MEDI6100 *Cancer Genetics*

*(The following modules are available to medical graduates only)*

<u>Module Value</u>	<u>Modules</u>
1	Clinical applications of molecular genetics in cancer medicine;
1	Cytogenetics of human cancers;
1	Gene therapy approaches in cancer medicine;
1	Laboratory practices in cancer genetics;
1	Molecular genetics of human cancers;
1	Stem cell transplantation & kinetics in cancer medicine.

### MEDI6200 *Clinical Allergy*

*(The following modules are available to medical graduates only)*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
2	Asthma: Pathogenesis, investigation and management of asthmatic patient;
1	Basic immunology;
2	Case study of severe drug eruption;
2	Common allergic skin diseases: Common allergic dermatological conditions such as atopic eczema, urticaria and allergic contact dermatitis;
1	Food allergy.

MEDI6300 *Geriatric Medicine*

<u>Module Value</u>	<u>Modules</u>
2	Common diseases and impairments in the elderly: Appropriate drug prescribing; Chronic medical diseases and management; Impairment, disability, handicap and rehabilitation.
1	General principles in ageing and geriatric medicine: Current concepts in ageing and healthy ageing; Ethical and medico-legal issues; Geriatric assessment.
2	Geriatric syndromes: Evaluation and interventions on syndromes: falls, incontinence, malnutrition and dysphagia, pressure ulcers, dementia.
1	Health and long term care for the elderly: Organisation and service delivery models; Principles and values.

**DEPARTMENT OF MICROBIOLOGY**

MICR6100 *Medical Microbiology*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
1	Antimicrobial susceptibility testing;
1	Biosafety and handling of infectious waste;
1	Cost containment and evidence-based laboratory testing;
1	Infection control and hospital epidemiology;
1	Laboratory and clinical interphase in infectious diseases;
1	Molecular technique in detection and typing of microbial agents;
1	Trends and mechanism of antimicrobial resistance;
1	Virological diagnosis of infectious diseases.

**DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY**

OBGY6200 *Assisted Reproduction Technology (Laboratory)*

<u>Module Value</u>	<u>Modules</u>
0.5	Advanced laboratory techniques in assisted reproduction;
1	Embryo culture and cryopreservation in assisted reproduction;
0.5	Reproductive physiology, assessment and principles of management of patients with subfertility;
3	Running of an assisted reproduction laboratory;
1	Semen preparation and assessment of sperm function.



OBGY6400 ***Obstetric and Gynaecological Ultrasonography***

*(The following modules are available to medical graduates only)*

<u>Module Value</u>	<u>Modules</u>
1.5	Dating and foetal growth;
1	Early pregnancy: diagnosis, foetal viability, ectopic pregnancy;
2	Foetal anomalies: screening;
1	General gynaecology;
0.45	Liquor, placenta and cervix;
0.05	Physics and bioeffects of ultrasound, scanning techniques, choice of equipment.

**DEPARTMENT OF ORTHOPAEDIC SURGERY**

OSUR6100 ***Hand Surgery***

<u>Module Value</u>	<u>Modules</u>
0.5	Applied anatomy and physiology of the hand;
0.5	Functional assessment of hand injuries;
1.5	Laboratory techniques with skin flaps, tendon repairs/transfers, nerve repairs, fracture reconstruction, microvascular surgery;
1.5	Rehabilitation of function after hand injury;
2	Study of clinical problems: traumatic, congenital, or infective problems.

OSUR6200 ***Spine Surgery***

<u>Module Value</u>	<u>Modules</u>
0.5	Biomechanics and assessment of patients with back problems.
0.25	Imaging for spinal problems, applications of computed imaging such as computed tomography and magnetic resonance imaging (This module will be given by the Department of Diagnostic Radiology);
0.5	Intraoperative spinal cord monitoring;
0.5	Laboratory techniques: approaches to the spine, anterior instrumentation, posterior instrumentation;
2	Operative surgery;
0.25	Spinal rehabilitation;
2	Study of clinical problems in 200 patients.

OSUR6300 ***Joint Replacement Surgery***

<u>Module Value</u>	<u>Modules</u>
1	Applied anatomy and biomechanics of the hip and knee;
1	Biomaterials in joint replacement;
1	Operative surgery;
1	Quality of life assessment;
1	Study of clinical problems;
1	Surgical management of chronic arthritis.

**DEPARTMENT OF PAEDIATRICS AND ADOLESCENT MEDICINE****PAED6300 *Child Neurology, Development and NeuroHabilitation***

<u>Module Value</u>	<u>Modules</u>
2	Clinical skills in diagnosis and assessment of neurological and developmental diseases in children;
2	NeuroHabilitation in paediatric practice – concept and outcome measures;
2	Problem solving skills for clinical cases.

**PAED6600 *Paediatric Cardiology***

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
1	Cardiac catheterisation: Indications for cardiac catheterization; Interpretation of cineangiography; Interpretation of haemodynamic results ; Introduction to interventional cardiac catheterization; Principles and techniques of cardiac catheterization.
1	Echocardiography: 2-dimensional, Doppler, colour flow mapping and M-mode echocardiography; Newer modalities: acoustic quantification and Doppler tissue imaging; Prenatal screening: foetal echocardiography; Stress echocardiography; Transoesophageal echocardiography.
1	Investigations in paediatric cardiology: Interpretation of chest roentgenograms; Interpretation of electrocardiograms; Interpretation of results of 24-hour ambulatory electrocardiography; Introduction to electrophysiological study; Exercise testing
1	Long-term outcomes of congenital heart diseases: Approach to management of adolescents and adults with congenital heart disease; Cardiac function after definitive and palliative cardiac surgery; Exercise capacity long after definitive cardiac surgery; Quality of life after surgical repair of congenital heart disease.
3	Principles and practice of paediatric cardiology: Approach to diagnosis of congenital heart disease; Clinical presentation; Intensive care after open and closed heart surgery; Interpretation of clinical signs; Medical and surgical management of congenital heart disease; Pathology, haemodynamics and natural course of acyanotic and cyanotic congenital heart diseases.

PAED6700 *Paediatric Endocrinology*

<u>Module Value</u>	<u>Modules</u>
1	Basic concepts in paediatric endocrinology: Anatomy, physiology, embryology and development of endocrine glands; Inborn error of metabolism; Mechanisms and actions of hormones and growth factors; Molecular genetics of endocrine disorders; Principles and practice of radioimmunoassays, radioreceptor assays, radioligand blotting, western blotting and tissue culture.
1	Dynamic tests of endocrine functions in children: Interpretation; Practical conduct of various tests; Theoretical basis of endocrine testing.
0.5	Growth: Abberant growth patterns; Factors affecting growth; Growth standards - use and abuse; Methods of auxological anthropometry; Normal foetal and postnatal growth.
0.5	Laboratory research techniques and molecular studies of hereditary diseases: General and special laboratory techniques in paediatric research; Molecular basis of some common hereditary diseases; Molecular biology tools for studying hereditary diseases.
3	Study of clinical endocrine problems: Clinical manifestations; Diagnosis and management; Pathogenesis.

**DEPARTMENT OF PATHOLOGY**PATH6200 *Current Topics in Clinical and Molecular Pathology*

A candidate is encouraged to select a major stream of study from one of the above subjects.

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below. When there are insufficient students enrolling in any one module, it may not be offered and our coordinator will advise the candidate to choose a related one.

<u>Module Value</u>	<u>Modules</u>
1	Blood cell and bone marrow pathology: Biology of normal haemopoietic cells; Bone marrow failure and transplantation; Common haematological malignancies.

- 2 Cytogenetics and molecular genetics of cancer:  
Genetic basis of cancer and implications for clinical diagnosis, prognostication and disease monitoring e.g. liver cancer, nasopharyngeal carcinoma, lung cancer;  
Principles and analysis of cytogenetics and molecular cytogenetics of malignancy.
- 1 Essence and advances in contemporary immunobiology:  
Dendritic cells (DC) in immune responses;  
Laboratory analysis of lymphocyte development and activation;  
Role of immunity in clinical diseases;  
T and B lymphocyte development and biology.
- 1 Immunological techniques for clinical diagnosis and research:  
Analysis of lymphocytic phenotype;  
Cell cycle and apoptosis;  
Clinical laboratory immunology;  
Principles and techniques in flow cytometry;  
Techniques and applications of immunohistochemistry and immunofluorescence microscopy.
- 2 Techniques and applications of molecular pathology:  
Basic concepts and research methodology in the molecular pathology of human diseases;  
Molecular basis of the pathogenesis of various human cancers – e.g. malignant lymphoma, colonic cancer, breast and ovarian cancer.

## DEPARTMENT OF PHARMACOLOGY

### PHAR6200 *Current Topics in Pharmacology*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
2	Basic and applied toxicology: The nature and mechanism of the toxicity of natural and synthetic substances, current methods for determining and evaluating potential health hazards and risks.
2	Clinical pharmacology: Adversity from drugs: adverse drug reactions, clinically important drug-drug interactions, clinical pharmacokinetics and therapeutic drug monitoring, clinical trial methodology applied to drug interventions, drug therapy/prophylaxis guidelines: development and implementation, how drugs are introduced into the market, prescribing challenges: minimizing medication errors, prescribing in the elderly, antibiotics and drug overdose.

- 2           Drugs for gastrointestinal diseases:  
Current understanding of the pathogenesis of gastroduodenal ulcers and inflammatory bowel diseases, the rationale and the strategy of drug treatment and the future directions of drug development for ulcer disease.
- 2           Drugs for the treatment of cardiovascular diseases:  
Antihypertensive drug therapy, vasodilators and diuretics, new developments in vasoactive compounds, lipid-lowering agents and choice of therapy, antiarrhythmic agents, therapy for heart failure.
- 2           Ethopharmacology and Nutraceuticals:  
Pharmacology of chemical components derived from plant source and the therapeutic efficacy of functional food ingredients.
- 2           Molecular pharmacology and drug targeting:  
Receptor interactions and second message systems; G-proteins and receptor structures; enzyme, DNA, as drug targets; ion channel interactions; molecular mimicry; selective drug actions and drug delivery systems.

## DEPARTMENT OF PHYSIOLOGY

### PHYO6300    *Current Topics in Physiology*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
6	Cardiopulmonary sciences;
6	Cell physiology;
6	Endocrinology;
6	Neurophysiology and brain function.

## DEPARTMENT OF PSYCHIATRY

### PSYS6100    *Medical Psychology*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
3	Counselling of a patient with chronic illness;
3	Psychological assessment and interventions in health care settings;
3	Psychological care and research in cancer;
3	Uses and applications of instrumentation in psychometrics (candidates have to fulfil basic vetting requirements for access and use of psychometric instruments).

PSYS6200     *Sleep Disorder*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
2	Clinical assessment of sleep disorder;
2	Physiological assessment of sleep disorder;
2	Physiology of sleep;
2	Sleep pathology;
2	Treatment of sleep disorder.

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**DEPARTMENT OF SURGERY**

SURG6100     *Breast Surgery*

<u>Module Value</u>	<u>Modules</u>
1	Breast clinic;
1	Psychological morbidity of breast disease (in conjunction with the Department of Psychiatry);
1	Radiological investigations in breast disease and screening for breast cancer (in conjunction with the Department of Diagnostic Radiology);
1	Reconstruction and cosmetic surgery of the breast;
1	Surgical anatomy and physiology of the breast;
1	Surgical pathology of breast disease.

SURG6200     *Colorectal Surgery*

<u>Module Value</u>	<u>Modules</u>
1	Benign conditions affecting the colon, rectum and anus;
1	Investigation for large bowel diseases;
1	Malignant conditions affecting the colon, rectum and anus;
1	Research project;
1	Surgical anatomy and physiology of the colon, rectum and pelvic floor;
1	Surgical pathology of the large bowel.

SURG6300     *Ear, Nose and Throat Surgery*

<u>Module Value</u>	<u>Modules</u>
1	Balance test;
1	Brainstem-evoked response audiometry;
1	Investigatory procedure: Acoustic rhinomanometry;
1	Investigatory procedure: Otoacoustic emission;
2	Use of the laser in ENT.

SURG6400 *Gastroduodenal Surgery*

<u>Module Value</u>	<u>Modules</u>
1	Anatomy and physiology of the stomach and duodenum;
1	Diagnostic and therapeutic endoscopy;
1	Gastric tumours;
1	Laparoscopic surgery;
1	Surgical treatment of benign and malignant conditions;
1	Ulcer diseases and their complications.

SURG6500 *Head and Neck Surgery*

<u>Module Value</u>	<u>Modules</u>
1	Assessment of the extent of head and neck cancer: a) endoscopy, b) other investigations;
2	Laboratory practice of microsurgery;
2	Microvascular free flap reconstruction;
1	Regional flap reconstruction.

SURG6600 *Hepatobiliary and Pancreatic Surgery*

<u>Module Value</u>	<u>Modules</u>
1	Hepatectomy and other major surgical procedures;
1	Laparoscopic surgery;
1	Percutaneous, laparoscopic and intraoperative ultrasonography;
2	Study of specific clinical problems, e.g. hepatocellular carcinoma, recurrent pyogenic cholangitis, acute pancreatitis (250 patients);
1	Surgical anatomy of the liver, biliary tract and pancreas.

SURG6700 *Neurosurgery*

<u>Module Value</u>	<u>Modules</u>
1	Applications of basic science to clinical management of patients with vascular disorders;
1	Application of monitoring methods to critically ill neurosurgical patients;
1	Autoregulation of cerebral blood flow;
1	Introduction to neurophysiology and neurobiochemistry;
1	Introduction to neurovascular surgery;
1	Methods of measuring cerebral blood flow clinically and experimentally, Biochemical changes during cerebral ischaemia, Cerebral ischaemia: pathogenesis, aetiology and management in various brain disorders.

SURG6800 *Oesophageal Surgery*

<u>Module Value</u>	<u>Modules</u>
1	Benign diseases of the oesophagus;
1	Diagnostic and therapeutic endoscopy;
1	Epidemiology;
1	Minimal access surgery of the oesophagus (benign and malignant diseases);
1	Surgery for oesophageal cancer;
1	Treatment options for oesophageal carcinoma.

SURG6900 *Paediatric Surgery*

A candidate is required to choose a total of **six** modules (i.e. total module values = 6) from the modules listed below.

<u>Module Value</u>	<u>Modules</u>
1	Developmental biology and molecular genetics for congenital anomalies and paediatric surgical conditions;
1	General paediatric surgery;
1	Neonatal surgery;
1	Paediatric endosurgery: endoscopy, laparoscopy and minimally invasive surgery;
1	Paediatric hepatobiliary surgery, including transplantation;
1	Paediatric surgical oncology;
1	Paediatric urology.

SURG6010 *Plastic and Reconstructive Surgery*

<u>Module Value</u>	<u>Modules</u>
2	Care of acute and chronic wounds;
1	Congenital deformities and management;
1	Microsurgery for reconstruction;
1	Principles of flap surgery;
1	Traumatic injuries and management.

SURG6030 *Surgical Endocrinology*

<u>Module Value</u>	<u>Modules</u>
1	Endocrine surgical pathology;
1	Laparoscopic adrenal surgery;
1	Localisation of endocrine tumours;
1	Management of common surgical endocrine problems including thyroid nodule, thyroid cancer and primary hyperparathyroidism;
1	Surgical anatomy of the thyroid, parathyroid and adrenal glands;
1	Thyroid and parathyroid surgery.



SURG6090 *Surgery in General*

<u>Module Value</u>	<u>Modules</u>
3	Principles and practice of general surgery;
2	Surgical education and training;
1	Surgical research.

SURG6050 *Urology*

<u>Module Value</u>	<u>Modules</u>
1	Benign prostatic hyperplasia;
1	Endourology;
1	Extracorporeal Shock Wave Lithotripsy (ESWL);
2	Urodynamics: principles & practice;
1	Urolithiasis.

SURG6070 *Vascular Surgery / Non-Invasive Vascular Laboratory Imaging Techniques*

<u>Module Value</u>	<u>Modules</u>
1	Anatomy, physiology, haemodynamics and ultrasound physics;
1	Basic principles of Doppler assessment of blood flow in normal and pathological conditions;
1	Colour Doppler assessment of venous obstruction and incompetence;
1	Detection, quantitation, and prediction of cerebrovascular insufficiency;
2	Real-time colour Doppler imaging of cerebral and peripheral arteries.

**D. DISSERTATION**

The dissertation shall comprise a record of substantial experimental or clinically-based work on the project, or a review of the existing literature on the subject of the project, presented in a form suitable for publication. A minimum of 200 hours is required for the project.