

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

*These regulations apply to candidates admitted to the Master of Medical Sciences in the academic year 2020-21 and thereafter.*

*(See also General Regulations and Regulations for Taught Postgraduate Curricula)*

### **M.18 Definition**

The degree of Master of Medical Sciences (MMedSc) is a postgraduate degree awarded for the satisfactory completion of the curriculum of one academic year for full-time study or two academic years for part-time study in the Li Ka Shing Faculty of Medicine.

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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### **M.19 Admission requirements**

To be eligible for admission to the curriculum leading to the degree of Master of Medical Sciences, a candidate shall:

- (a) comply with the General Regulations;
- (b) comply with the Regulations for Taught Postgraduate Curricula;
- (c) hold a Bachelor's degree with honours or the degrees 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
- (d) satisfy the examiners in a qualifying examination if required.

Advanced standing of up to 12 credit units may be granted to a candidate who has successfully completed equivalent course(s) subject to approval by the Faculty Board. Candidates seeking advanced standing should submit a written application to the Faculty Office before commencement of the study. Such course(s) should be completed no more than 5 years prior to the candidate's commencement of the Master of Medical Sciences.

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### **M.20 Qualifying examination**

- (a) A qualifying examination may be set to test the candidate's formal academic ability or his /her 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; and
  - (b) A candidate who is required to satisfy the examiners in a qualifying examination shall not be permitted to register until he/she has satisfied the examiners in the examination.
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### **M.21 Award of degree**

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

- (a) comply with the General Regulations;
  - (b) comply with the Regulations for Taught Postgraduate Curricula; and
  - (c) complete the curriculum and satisfy the examiners in accordance with the regulations set out below.
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### **M.22 Period of study**

The curriculum shall normally extend over one academic year of full-time study or two academic years of part-time study. Candidates shall not be permitted to extend their study beyond the maximum period

of registration of two academic years of their full-time study or four academic years of their part-time study.

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### **M.23 Completion of curriculum**

To complete the curriculum, a candidate shall

- (a) satisfy the requirements prescribed in TPG6 of the Regulations for Taught Postgraduate Curricula;
- (b) take no less than 69 credit units in the manner specified in these regulations and the syllabus, and follow the instructions in the syllabus prescribed for the Courses and complete satisfactorily all required written, practical and/or clinical work;
- (c) satisfy the examiners in the Courses by continuous assessments and/or by written examinations; and
- (d) complete and present a satisfactory dissertation on an approved research project.

The examiners may also prescribe an oral examination.

Candidates who fail to fulfil the requirements within the prescribed maximum period of registration shall be recommended for discontinuation under the provision of General Regulation G12, except that candidates, who are unable because of illness or circumstances beyond their control to complete the requirements within the prescribed maximum period of registration, may apply for permission to extend their period of studies.

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### **M.24 Title of dissertation**

The title of the dissertation shall be submitted for approval before the end of the second semester of the final academic year, and the dissertation shall be presented not later than the end of the final academic year. The candidate shall submit a statement that the dissertation represents his/her own work (or in the case of conjoint work, a statement countersigned by his/her co-worker, which shows his/her 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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### **M.25 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 one month 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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### **M.26 Discontinuation of studies**

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/her dissertation

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

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### **M.27 Grading system**

Individual Courses (i.e. Core Course, Specialised Field of Study and Dissertation) shall be graded according to the grading system of "Pass" or "Fail".

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**M.28 Examination results**

At the conclusion of the examinations a pass list shall be published. A candidate who has shown exceptional merit in all examinations may be awarded a mark of distinction which shall be recorded in the candidate's transcript.

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

The Master of Medical Sciences curriculum consists of 12 credit units of Core Courses, 18 credit units of Specialised Courses in the chosen Specialised Field of Study and 39 credit units of capstone experience (dissertation), making a minimum of 69 credit units of teaching and prescribed work.

The mode of assessment for Core and Specialised Courses comprises continuous assessments and examinations. Candidates are also required to submit a dissertation on a selected project in the chosen Specialised Field of Study to the satisfaction of the examiner(s).

### **A. INDUCTION COURSES**

**All candidates will be required to attend the Induction Courses of 10 hours:**

MMSC6001 *Dissertation Writing* (7.5 hours)

#### *Aim(s)*

- ♦ To raise students' awareness of essential aspects of academic writing that contribute to the overall communicative success of a dissertation.
- ♦ To enable students to approach their writing with confidence and apply skills at key stages of their research process.

#### *Contents*

- ♦ Citing research
- ♦ Communicative success in reporting research
- ♦ Features of scientific research language
- ♦ Publication styles
- ♦ Reviewing the literature
- ♦ Structure of dissertations: The IMRaD formula
- ♦ The discussion section: Making claims
- ♦ The introduction: Stating the research gap
- ♦ Writer's stance

MMSC6002 *Clinical Trials and Biostatistics* (2.5 hours)

#### *Aim(s)*

- ♦ To make students recognize the importance of clinical trials and understand clinical trial design.
- ♦ To equip students with basic statistical knowledge to analyze clinical trial data and interpret analysis result.

#### *Contents*

- ♦ Types of Clinical Trials
- ♦ Clinical Trial Design
- ♦ Clinical Trial Phases
- ♦ Protocol Development
- ♦ Basic statistical analysis methods and reporting

## B. RESEARCH ETHICS

All candidates will be required to pass the web-based learning course on Responsible Conduct of Research (RCR) offered by Collaborative Institutional Training Initiative at the University of Miami (CITI programme).

MMSC6003 *Research Ethics*

### Aim(s)

- To raise students' awareness on the importance of research integrity, accountability and research ethics.

### Contents

- RCR training covers a standard set of core topics: authorship and publication, collaborative research, conflict of interests, data management, mentoring, peer review, research misconduct, research with animal subjects and research with human subjects.

## C. CORE COURSES

Candidates will be required to take 12 credit units (i.e. **four** Core Courses of 3 credit units each) from the following Core Courses. **At least one Course** should be selected **from either of the two main sections, viz. Research Methods and Biological Systems.**

### I. RESEARCH METHODS

CMED7100 *Introduction to Biostatistics*

#### Aim(s)

- ♦ To introduce the students to biostatistical methods and the underlying principles, as well as practical guidelines of "how to do it" and "how to interpret it" as the role they can play in decision making for public health majors.
- ♦ To introduce the students to descriptive and inferential statistical techniques, with emphasis on selection of appropriate methods and tools for various applications, and proper interpretation of results.
- ♦ To introduce SPSS, a commonly used software package for statistical analyses.

#### Contents

- ♦ Exploratory data analysis
- ♦ Regression and correlation
- ♦ Probability
- ♦ Statistical inference
- ♦ Hypothesis tests
- ♦ Designing studies
- ♦ Applied regression
- ♦ Analysis of survival data
- ♦ Statistics in practice

CMED7200 *Introduction to Epidemiology*

#### Aim(s)

- ♦ To identify, define and calculate measures of illness and their association with health determinants, including risks, rates and prevalence.
- ♦ To describe and differentiate common epidemiological study designs, and discuss their strengths and limitations.
- ♦ To discuss approaches to the identification of causes of illness and the implications for control efforts.

### Contents

The Course consists of four sections:

- Approaches to measuring the occurrence and distribution of illness in populations
  - ♦ Measures of occurrence
  - ♦ Measures of effect and association
- Design, interpretation and critical appraisal of epidemiologic studies
  - ♦ Randomized trials
  - ♦ Cohort studies
  - ♦ Case-referent studies
  - ♦ Other types of study designs
- Design, interpretation and critical appraisal of epidemiologic studies
  - ♦ Directed acyclic graphs (DAGs) and causal inference
  - ♦ Bias, confounding and interaction
- Epidemiology in practice
  - Conducting and reporting epidemiological studies
  - Using appropriate epidemiological evidence in public health practice and medical research

### **PATH6100 *Laboratory Methods and Instrumentation***

#### Aim(s)

- ♦ To provide students with the basic understanding of the principles and latest developments in the practical applications of a broad range of techniques commonly employed in medical research projects.

#### Contents

- ♦ Advance immunofluorescent technologies in molecular study
- ♦ Animal models for research
- ♦ Basic concepts in automated DNA sequencing and genotyping
- ♦ Basic concepts in conventional and molecular cytogenetics
- ♦ Cancer stem cells: methods and protocols
- ♦ Epigenetics and methylation analysis
- ♦ Mutation detection technologies
- ♦ Principle and applications of flow cytometry
- ♦ Protein analysis methods
- ♦ Tissue processing and immunohistochemistry

### **PATH6500 *Practical Course in Laboratory Methods***

*(Prerequisite: PATH6100 Laboratory Methods and Instrumentation)*

#### Aim(s)

- ♦ To provide practical experience for laboratory methods commonly employed in medical research projects.
- ♦ To provide training in experimental design and biological sample processing.
- ♦ To develop observational and record keeping skills.

#### Contents

Tissue processing and immunohistochemistry:

- ♦ Tissue embedding
- ♦ Microtome sectioning of paraffin block and cryostat sectioning of frozen block
- ♦ H&E staining, immunohistochemistry (IHC)
- ♦ Histological analysis

Tissue culture:

- ♦ Basic tissue culture techniques
- ♦ Cell growth assays (Tryphan blue staining, cell counting, MTS assay)
- ♦ Colony formation assay
- ♦ Flow cytometric analysis

Preparation of clinical samples for molecular diagnosis:

- ♦ Extraction methods for genomic DNA and RNA
- ♦ Extraction methods for protein
- ♦ Reverse transcription of mRNA
- ♦ Electrophoresis (agarose gel, SDS-PAGE)

Molecular detection of gene expression, mutation, and DNA methylation analysis:

- ♦ PCR / quantitative PCR
- ♦ DNA sequencing
- ♦ Genotyping

### **SBMS7100 *Practical Bioinformatics***

*(Candidates choosing this Core Course should have molecular biology background.)*

#### **Aim(s)**

- ♦ To provide students with the basic understanding of the principles and latest developments/tools in bioinformatics.

#### **Contents**

- ♦ Biological databases
- ♦ Gene prediction
- ♦ Information retrieval: entrez and SRS
- ♦ Introduction - Essential concepts on gene structure and sequence, protein structure and function
- ♦ Multiple sequence alignment
- ♦ Pair-wise sequence alignment I: dot plots
- ♦ Pair-wise sequence alignment II: dynamic programming
- ♦ Phylogenetic prediction
- ♦ Sequence database searches: BLAST, FASTA
- ♦ Substitution matrices

### **SURG6910 *Laboratory Animal Handling and Surgical Techniques***

#### **Aim(s)**

- ♦ To introduce the various approaches in the generation and applications of various animal models for medical research.
- ♦ To introduce the safety/ethics legislation in the use of animal for medical research.
- ♦ To introduce surgical techniques for small and big animals.

#### **Contents**

- ♦ Animal models for human diseases
- ♦ Animal surgical techniques: demonstration of laparoscopic surgery
- ♦ Audio-visual instruction on animal handling techniques
- ♦ Cancer models
- ♦ Common laboratory animal species in the Laboratory Animal Unit
- ♦ Drug/radiation induced animal disease models
- ♦ Ethics in using laboratory animals
- ♦ Genetically modified (GM) animal disease models
- ♦ Transplantation immunology
- ♦ Transplantation models
- ♦ University and Government regulations governing the use of animals for experimental purposes

## II. BIOLOGICAL SYSTEMS

### MEDI6500 *Cell Metabolism*

#### Aim(s)

- ♦ To introduce key catabolic and anabolic pathways in cellular metabolism.
- ♦ To introduce latest concept on metabolic regulation and integration in mammals.
- ♦ To introduce and discuss application of proteomics and metabolomics in metabolic research.
- ♦ To introduce metabolic adaptations to nutritional and environmental changes.
- ♦ To enunciate the metabolic basis of human diseases.

#### Contents

- ♦ Application of proteomics and metabolomics in metabolic research
- ♦ Cellular machinery for energy metabolism
- ♦ Control of cellular metabolism by circadian clock
- ♦ Hormonal integration of metabolism in mammals
- ♦ Major catabolic and anabolic pathways in cellular metabolism
- ♦ Metabolic adaptations to fasting/starvation and environmental changes
- ♦ Metabolic basis of major human diseases
- ♦ Metabolic regulation by posttranslational modifications

### PAED7100 *Principles to Genetic Counselling*

#### Aim(s)

- ♦ To understand the basis of human genetics and genetic disorders.
- ♦ To provide an overview of the roles and duties of a genetic counsellor in genetic assessment and result disclosure.
- ♦ To develop basic clinical skills to conduct interviews, present relevant genetic information to patients and families, and facilitate informed decision.
- ♦ To recognize the ethical, legal and policy issues related to genetic testing and genomic development.
- ♦ To understand the basis of human genetics and genetic disorders.

#### Contents

- ♦ Introduction to human genetics and inheritance Cellular machinery for energy metabolism
- ♦ Genetic assessment and informed consent
- ♦ Result disclosure and counselling theories
- ♦ Genetic testing and genomic technology
- ♦ Ethics, law and policy in genetics
- ♦ Case discussion and role play on the above topics

### PATH6300 *General Cytopathology*

#### Aim(s)

- ♦ To equip students to meet the increased demand on the service of clinical cytology in Hong Kong.

#### Contents

- ♦ Clinical relevance of cytology consultation reports: implications on management
- ♦ Collection of cell samples and laboratory processing of cytology specimens
- ♦ Ethical and legal aspects of clinical cytopathology
- ♦ How to diagnose malignancy in gynaecological cytology specimens
- ♦ How to diagnose malignancy in non-gynaecological exfoliated cytology and fine needle aspiration specimens
- ♦ Organisation of a cytopathology laboratory

- ♦ Practical workshop on fine needle aspiration cytopathology
- ♦ Practical workshop on gynaecological cytopathology
- ♦ Practical workshop on non-gynaecological exfoliated cytopathology
- ♦ Quality assurance programme and laboratory accreditation
- ♦ Recent advances in cytopathology

**PATH6600 *Fundamentals of Common Human Diseases***  
(not for students with Medical/Dental background)

**Aim(s)**

- ♦ To introduce the epidemiology, pathophysiology, clinical and pathological features of common diseases including cancers of the cardiovascular, respiratory, reproductive, central nervous system, urinary, hepatobiliary, gastrointestinal and haematolymphoid systems.
- ♦ To introduce approaches to clinical problems on toxicology.
- ♦ To demonstrate representative cases and illustrate the approach to diagnosis of various diseases, and illustrate the role of pathology practice in clinical medicine.

**Contents**

Epidemiology, pathophysiology, clinical and pathological features of common human diseases including cancers. Cardiovascular, respiratory, reproductive, central nervous system, urinary, breast, hepatobiliary, gastrointestinal, and haematolymphoid diseases will be lectured. Illustrative case presentations will be offered on selected topics. Approaches to problems on toxicology will also be covered. The role of pathology practice in clinical medicine will be introduced.

- ♦ Introduction to pathology and immunology
- ♦ Global burden of disease
- ♦ Common cancers in Hong Kong
- ♦ Cardiovascular diseases and case illustration
- ♦ Common diseases of the gastrointestinal tract
- ♦ Modalities of radiological imaging for diagnosis and management of human diseases
- ♦ Common respiratory diseases: clinical patterns and basic pathology
- ♦ Common diseases of female genital tract and case illustration
- ♦ Common breast diseases and case illustration
- ♦ Common vascular central nervous system diseases and dementia
- ♦ Common urinary diseases and case illustration
- ♦ Anaemia – What, Why and How?
- ♦ Case illustration on anaemia
- ♦ Toxicology in clinical practice

**PATH6700 *Recent Advances in Cancer Biology***

**Aim(s)**

- ♦ To introduce emerging concepts in cancer biology.
- ♦ To introduce cutting edge topics in cancer research.

**Contents**

- ♦ Genetic aspects of cancer heterogeneity
- ♦ Cancer metastasis
- ♦ Cancer epigenetics
- ♦ RNA splicing in cancer
- ♦ Cancer stem cells
- ♦ Cancer metabolism
- ♦ Tumor microenvironment
- ♦ Cancer immunology
- ♦ Mouse models in cancer research

- ♦ Surgical pathology in management and prognostication of common human cancers

### PHAR6100 *Principles of Drug Action*

#### Aim(s)

- ♦ To provide general and broad knowledge about drug distribution and actions in human body and how drugs produce therapeutic effects in the body.
- ♦ To introduce pharmacokinetic properties of drugs and drug-receptor interactions.
- ♦ To explain the mechanisms underlying the tolerance, dependence and resistance to drugs.
- ♦ To discuss the adverse drug actions, drug interactions and drug allergy.

#### Contents

- ♦ Adverse effects of drugs
- ♦ Dose-response relationships
- ♦ Drug allergy and resistance
- ♦ Drug interaction
- ♦ Drug pharmacokinetics
- ♦ Drug-receptor interaction
- ♦ Pharmacogenetics and pharmacogenomics

### PHAR7300 *Therapeutic Antibodies*

#### Aim(s)

- ♦ To provide an overview of monoclonal antibody-based therapeutics.
- ♦ To study the pharmacokinetics and pharmacodynamics of therapeutic antibodies.
- ♦ To introduce different technologies for therapeutic antibody engineering.
- ♦ To review the contemporary development of therapeutic antibodies in cardiovascular, metabolic and cancer diseases.

#### Contents

- ♦ Monoclonal antibody-based therapeutics – Medical History and Current Status
- ♦ Pharmacokinetics and pharmacodynamics of therapeutic antibodies
- ♦ Engineering and production of therapeutic antibodies
- ♦ Application and development of therapeutic antibodies in different types of diseases

### SBMS7200 *Genes and Gene Functions in Diseases*

#### Aim(s)

- ♦ To provide fundamental knowledge of gene and gene function in normal/abnormal human body.

#### Contents

- ♦ Complex genetic diseases
- ♦ Reverse genetics and cloning of human diseases genes: the cystic fibrosis gene
- ♦ Molecular basis of genetic disease
- ♦ Molecular mechanisms of aging
- ♦ Gene therapy: bioethics of molecular medicine
- ♦ Oncogenes and tumour suppressor genes
- ♦ Protein dysfunction and disease
- ♦ Next generation sequencing
- ♦ Epigenomics analysis
- ♦ Introduction to protein structure and function
- ♦ Protein post-translational modifications

- ♦ Gene Function analysis: model organism and transgenic animals

#### SBMS7500 *Advanced Cell Biology* -

##### Aim(s)

- ♦ To provide students with a general knowledge of cell biology.
- ♦ To introduce the regulation of cell functions by signalling pathways.
- ♦ To introduce students with recent advances and applications in cell biology..

##### Contents

- ♦ Essential components of the cell
- ♦ Cell cycle and cell divisions
- ♦ Cell survival and apoptosis
- ♦ Calcium signals in cellular communication
- ♦ Hedgehog signalling in development
- ♦ Cellular stress response
- ♦ Cell-cell interaction
- ♦ iPSC-derived neural stem cell
- ♦ Glial cell biology
- ♦ Intracellular transport in neuron
- ♦ Neuronal and glial cell migration
- ♦ Cell disorders

#### SBMS7600 *Integrative Perspectives of Body Functions*

##### Aim(s)

- ♦ To provide the students with the current knowledge on the mechanisms of human body functions with an integrative perspective.
- ♦ To introduce to the students state-of-the-art research approaches to the study of human body functions.

##### Contents

- ♦ Homeostatic regulation of body functions: circadian and temporal regulation
- ♦ Metabolic and hormonal control: oxygen and glucose
- ♦ Motor control: movement, coordination and behavior
- ♦ Neuropsychological functions: cognition and emotion

## **D. SPECIALISED FIELD OF STUDY**

In addition, each candidate will be required to choose one Specialised Field of Study.

A total of 18 credit units should be selected in the chosen Specialised Field of Study.

## **SCHOOL OF BIOMEDICAL SCIENCES**

#### SBMS7700 *Current Topics in Biomedical Sciences*

##### Aim(s)

- ♦ To enable students to gain basic knowledge in cell biology, physiology, cancer biology and brain function under normal and disease conditions.
- ♦ To provide training in choosing the current innovative research topics.
- ♦ To provide guidance in critical thinking in analysing the scientific papers and gain insight into the importance and contribution to the field of studies.
- ♦ To guide them to discuss and write scientific essays highlighting the strength and weakness of the major hypothesis, results and interpretations.
- ♦ To develop scientific writing skills.

### Contents

- ♦ Candidates are required to take 18 credit units.
- ♦ They are required to write 5 reviews on five different topics under their chosen block (either A, B or C).
- ♦ They may consult their supervisor or the relevant topic supervisors to come up with five review titles from each block.
- ♦

Course Code	Courses	Credit Units
SBMS7701	<b>Block A: Molecular Neuroscience</b> <ul style="list-style-type: none"><li>• Animal models of neurodegenerative disorder</li><li>• Current topics in neuroimmunology</li><li>• Development of the nervous system</li><li>• Mechanisms of neurological disorders</li><li>• Molecular/cellular physiology and brain function</li><li>• Preventive and regenerative medicine in nervous system</li><li>• Synaptic plasticity in learning and memory</li></ul>	18
SBMS7702	<b>Block B: Cell Biology</b> <ul style="list-style-type: none"><li>• Cell adhesion</li><li>• Cell migration</li><li>• Centrosome biogenesis</li><li>• Pluripotent embryonic stem cell</li><li>• Single cell technology</li><li>• T cell immunity</li></ul>	18
SBMS7703	<b>Block C: Cancer Biology</b> <ul style="list-style-type: none"><li>• Artificial intelligence in oncology</li><li>• Cancer genomics</li><li>• Cancer metastasis</li><li>• Cancer stem cells</li><li>• Cancer systems biology</li><li>• Fatty liver disease</li><li>• Genome instability and human diseases</li><li>• Microbiome and cancer</li><li>• Pathogenesis of nasopharyngeal carcinoma</li><li>• Pre-clinical cancer models for drug screening</li></ul>	18

### SBMS7800 *Molecular Biology and Bioinformatics for Biomedical Sciences*

#### Aim(s)

- ♦ To introduce laboratory techniques of biochemistry and molecular biology.
- ♦ To enable students to carry out research independently using the skills acquired in the research project.
- ♦ To provide training to students to work as a team with other scientists and gain insight into the field of research.
- ♦ To provide training to students so that they can critically analyse scientific papers and design experiments to verify scientific theories.

### Contents

Candidates are required to take 18 credit units from three of the four courses listed below.

Course Code	Courses	Credit Units
SBMS7801	<b>Advanced biochemistry:</b> Signal transduction, biomodulators, enzyme kinetics, catalytic mechanisms, protein chemistry, post-translational modification of proteins	6
SBMS7802	<b>Biomedical sciences seminar:</b>	6

	Present and attend seminars, criticise, think, write and talk about biochemical sciences, organise mini-conferences, technical reviews, research proposals, communication skills, personal and career development	
SBMS7803	<b>Molecular biology of the gene:</b> Eukaryotic gene regulation, control of gene expression, transcription factors, DNA-protein interaction	6
SBMS7804	<b>Practical bioinformatics:</b> (Advice to Applications: candidates choosing this Specialised Course should have molecular biology background.) Gene identification Information searching and retrieval: Entrez and SRS Internet resources: DNA and protein sequence databases Patterns, Motifs and Profiles analysis Phylogenetic analysis Sequence alignment: multiple sequence alignment Sequence database searching: FASTA, BLAST, Smith-Waterman, algorithm and parameters Simple sequence analysis	6

## DEPARTMENT OF DIAGNOSTIC RADIOLOGY AND CLINICAL ONCOLOGY

### DRAD6201 *Clinical Physics in Radiation Oncology and Medical Imaging*

#### Aim(s)

- To educate and prepare students for professional and/or research career development in different areas related to medical physics.
- To provide students with professional knowledge about the clinical physics in oncology and radiology and its medical application.
- To introduce the rationale and principle of physics in radiotherapy and medical imaging.

#### Contents

Course Code	Courses	Credit Units
DRAD6202	Advance radiological physics and radiation dosimetry	3
DRAD6203	Brachytherapy physics	3
DRAD6204	Health physics with focuses on radiological protection in medical sectors*	3
DRAD6205	Magnetic resonance imaging – principles and its applications	3
DRAD6206	Molecular imaging and medical cyclotron	3
DRAD6207	Nuclear medicine sciences	3
DRAD6208	Physics in medical imaging	3
DRAD6209	Principles and practice of radiotherapy physics	3
DRAD6210	Quality assurance (QA) in radiation therapy and medical imaging	3
DRAD6211	Foundation in basic imaging and medical physics*	3

\* Compulsory courses

## DEPARTMENT OF MEDICINE

### MEDI6600 *Metabolic Medicine*

(Candidates taking this Specialised Field of Study should also take the Core Course MEDI6500 Cell Metabolism as basic knowledge)

#### Aim(s)

- ♦ To help students to develop skills and critical thinking for both basic and clinical research on metabolic diseases.
- ♦ To provide students an updated knowledge in major metabolic diseases, including obesity, diabetes, cardio-metabolic syndrome, cancer and other aging-related disorders.
- ♦ To introduce current and future treatment and prevention of major metabolic disorders.

### Contents

Course Code	Courses	Credit Units
MEDI6601	Current therapeutic strategies for metabolic diseases <ul style="list-style-type: none"> <li>♦ Current drugs for obesity, diabetes, diabetic complications and lipid disorders</li> <li>♦ Functional food, nutraceuticals and traditional herbals for treatment of metabolic disorders</li> <li>♦ Life style modifications (calorie restriction, exercise and balanced diet etc) in the prevention of metabolic disorders</li> <li>♦ Metabolic disease drug discovery: from bench to bed</li> </ul>	6
MEDI6602	Current topics in energy balance and obesity <ul style="list-style-type: none"> <li>♦ Adipose tissue dysfunction and obesity</li> <li>♦ Brown adipose tissue: a weapon against obesity</li> <li>♦ Control of energy balance by the gut-brain-liver axis</li> <li>♦ Latest concepts on energy intake and energy expenditure</li> <li>♦ Modern technologies for obesity research</li> <li>♦ White adipose tissue as an energy storage organ and secretory gland</li> </ul>	6
MEDI6603	Recent advances in metabolic disorders <ul style="list-style-type: none"> <li>♦ Calcium metabolism and osteoporosis</li> <li>♦ Cancer as a metabolic disease</li> <li>♦ Genetically inherited metabolic disease</li> <li>♦ Lipid abnormality, inflammation and atherosclerotic diseases</li> <li>♦ Metabolic changes in autoimmune diseases</li> <li>♦ Metabolic derangement in aging</li> <li>♦ Metabolic dysregulation and different types of diabetes</li> <li>♦ Mitochondrial disorders</li> </ul>	6

## DEPARTMENT OF MICROBIOLOGY

### MICR6100 *Medical Microbiology*

*(Candidates taking this Specialised Field of Study should also take the Core Course SBMS7100 Practical Bioinformatics as basic knowledge)*

### Aim(s)

- ♦ To improve and sustain a high standard in laboratory practices and management and enhance development in clinical microbiology laboratories in Hong Kong.
- ♦ To enhance training in other laboratory science and provide continuous education for technicians, scientists or other health care workers on medical microbiology and infectious diseases.
- ♦ To provide structured training to enable postgraduates to embark on specialised research, clinical service or teaching for career and personal development.
- ♦ To provide training on current laboratory methods and practices and recent advances related to epidemiology, conventional and molecular diagnostics in medical microbiology and infectious disease, infection control and antimicrobial resistance.
- ♦ To provide practical and research experience in medical microbiology and infectious disease.

### Contents

Course Code	Courses	Credit Units
MICR6101	Biosafety and handling of infectious waste ♦ Safety management, good work practices, biosafety levels, laboratory acquired infections, transportation of infectious substances/diagnostic specimens and infectious waste management	3
MICR6102	Conventional and molecular techniques in detection and typing of microbial agents ♦ Recent advances in microbial identification techniques and approaches	3
MICR6103	Emerging antimicrobial resistance and antimicrobial chemotherapy ♦ New and old antibiotics, mechanism of antimicrobial actions, antibiotic resistance epidemiology, traditional method for detection of resistance and recent advances	3
MICR6104	Infection control and hospital epidemiology ♦ Hand hygiene, standard precautions, outbreak investigation, and infection control issues	3
MICR6105	Laboratory and clinical interphase in infectious diseases ♦ Specimen priority, specimen rejection criteria, cost containment, quality assurance, quality control and automation in a medical microbiology laboratory	3
MICR6106	Virological diagnosis of infectious diseases ♦ Basic methods in virology, clinical applications, rapid tests and biosafety; emerging viral infections: their diagnosis and control	3

## DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

### OBGY6200 *Assisted Reproduction Technology (Laboratory)*

#### Aim(s)

- ♦ To introduce the scientific basis of assisted reproductive technology.
- ♦ To introduce the basic skills in handling gametes and embryos.

#### Contents

Course Code	Courses	Credit Units
OBGY6201	Embryo culture	3
OBGY6202	Fertilization	3
OBGY6203	Gamete and embryo cryopreservation	3
OBGY6204	Management of assisted reproduction laboratory	3
OBGY6205	Reproductive physiology, assessment and principles of management of patients with subfertility	3
OBGY6206	Semen analysis and assessment of sperm function	3

## DEPARTMENT OF ORTHOPAEDICS AND TRAUMATOLOGY

### OSUR6200 *Advanced Musculoskeletal Research and Practice*

#### Aim(s)

- ♦ Spine Surgery
  - To provide students with an in-depth study on spinal disorders and spine surgery.
- ♦ Joint Replacement Surgery
  - To present up-to-date knowledge, to describe basic science in joint replacement surgery, and to share practical tips in management of arthritic conditions.
  - To provide training and a platform to perform basic or clinical research for students to write up a dissertation or scientific papers.

- To enhance the practice of the students and improve the standard of care.
- ♦ Advanced Musculoskeletal Imaging
  - To provide training on advanced musculoskeletal imaging for spinal disorders.
- ♦ Orthopaedic Trauma Surgery
  - To provide updated knowledge in basic science and clinical management of fractures and dislocations.
  - To enhance and improve the standard of care in orthopaedic trauma.
  - To provide training and a platform to reform basic or clinical research for dissertations or scientific publications.
- Hand Surgery
  - To provide students an opportunity to study the Hand Surgery of one of the subspecialty of Orthopaedics Surgery.
  - To provide training and a platform to reform basic or clinical research for dissertation or scientific publications.
  - To enhance the clinical care and practice of students who are working in the musculoskeletal field.

**Contents**

Course Code	Courses	Credit Units
OSUR6201	Spine Surgery <ul style="list-style-type: none"> <li>• Biomechanics and assessment of patients with back problems</li> <li>• Intraoperative spinal cord monitoring</li> <li>• Laboratory techniques: approaches to the spine, anterior instrumentation, posterior instrumentation</li> <li>• Spinal rehabilitation</li> </ul>	18
OSUR6202	Joint Replacement Surgery <ul style="list-style-type: none"> <li>• Applied anatomy and biomechanics of the hip and knee</li> <li>• Biomaterials in joint replacement</li> <li>• Operative surgery</li> <li>• Quality of life assessment</li> <li>• Study of clinical problems</li> <li>• Surgical management of chronic arthritis</li> </ul>	18
OSUR6203	Advanced Musculoskeletal Imaging <ul style="list-style-type: none"> <li>• Anatomic and kinesiological examination of the spine</li> <li>• Application of micro-CT for bone study</li> <li>• Case studies for cervical myelopathy and spinal instability using diagnostic DTI/BOLD and dynamic VDF</li> <li>• Paraspinal muscle imaging for low back pain assessment</li> <li>• Principle of DTI/BOLD in the spinal cord</li> </ul>	18
OSUR 6204	Orthopaedic Trauma Surgery <ul style="list-style-type: none"> <li>• Fracture healing principle</li> </ul> Topics: <ul style="list-style-type: none"> <li>♦ Anatomy and physiology of bone</li> <li>♦ Fracture of bone</li> <li>♦ Mechanical and chemical effects of the fracture</li> <li>♦ Fracture and blood supply</li> <li>♦ Fracture healing after fracture fixation</li> </ul> <ul style="list-style-type: none"> <li>• Biomechanics of fixation devices</li> </ul> Topics: <ul style="list-style-type: none"> <li>♦ Concepts of absolute and relative stability</li> <li>♦ Implants providing absolute stability</li> <li>♦ Implants providing relative stability</li> <li>♦ Recent developments in internal fixation technology and related research</li> </ul> <ul style="list-style-type: none"> <li>• Operative surgery</li> </ul>	18

	<p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Applied anatomy in surgical approaches for fracture fixation</li> <li>♦ Antibiotic prophylaxis in fracture fixations</li> <li>♦ Thromboembolic prophylaxis</li> <li>♦ General complications of orthopaedic trauma surgery</li> </ul> <p>• Rehabilitation</p> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ General principles of rehabilitation</li> <li>♦ Roles of physiotherapists and occupational therapists in orthopaedic rehabilitation</li> <li>♦ Rehabilitation of upper limb fractures</li> <li>♦ Rehabilitation of lower limb fractures</li> </ul> <p>• Outcome assessment</p> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Methods to measure outcomes after fracture management: clinical, radiological and different assessment scores</li> <li>♦ Importance of outcome assessment in orthopaedic trauma research</li> <li>♦ Specific tools to measure outcomes</li> </ul> <p>• Study of clinical problems</p> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Clinical manifestations</li> <li>♦ Diagnostic and subsequent management</li> <li>♦ Pathogenesis</li> </ul>	
OSUR 6205	<ul style="list-style-type: none"> <li>♦ Hand Surgery Applied anatomy and physiology of the hand</li> <li>♦ Laboratory techniques with skin flaps</li> <li>♦ Rehabilitation of function after hand injury</li> <li>♦ Study of clinical problems</li> <li>♦ Tendon repairs/transfer nerve repairs fracture</li> </ul>	18

## DEPARTMENT OF PAEDIATRICS AND ADOLESCENT MEDICINE

### PAED6600 *Paediatric Medicine*

#### Aim(s)

- ♦ To provide a platform of learning for clinicians, scientists, and other health care providers interested to pursue in depth in different fields of paediatric medicine
- ♦ Paediatric Cardiology: To enable students to acquire knowledge on the principles and practice of paediatric cardiology
- ♦ Community Child Health: To understand about child health problems and common childhood diseases in the community
- ♦ Paediatric Haematology / Oncology: To deliver the basic knowledge and concepts in paediatric haematology / oncology / immunology and also transplantation.

#### Contents

Course Code	Courses	Credit Units
PAED6601	Paediatric Cardiology  <i>Candidates are required to take all of the following three courses.</i>	18

	<ul style="list-style-type: none"> <li>• <i>Echocardiography and investigations in paediatric cardiology</i></li> </ul> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ 2-dimensional Doppler, colour flow mapping and M-mode</li> <li>♦ Echocardiography</li> <li>♦ Newer modalities: acoustic quantification and Doppler tissue imaging</li> <li>♦ Prenatal screening: foetal echocardiography</li> <li>♦ Stress echocardiography</li> <li>♦ Transoesophageal echocardiography</li> <li>♦ Interpretation of chest roentgenograms</li> <li>♦ Interpretation of electrocardiograms</li> <li>♦ Interpretation of results of 24-hour ambulatory electrocardiography</li> <li>♦ Introduction to electrophysiological study</li> <li>♦ Exercise testing</li> </ul> <ul style="list-style-type: none"> <li>• <i>Long-term outcomes of congenital heart diseases</i></li> </ul> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Approach to management of adolescents and adults with congenital heart disease</li> <li>♦ Cardiac function after definitive and palliative cardiac surgery</li> <li>♦ Exercise capacity long after definitive cardiac surgery</li> <li>♦ Quality of life after surgical repair of congenital heart disease</li> </ul> <ul style="list-style-type: none"> <li>• <i>Principles and practice of paediatric cardiology</i></li> </ul> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Approach to diagnosis of congenital heart disease</li> <li>♦ Clinical presentation</li> <li>♦ Intensive care after open and closed heart surgery</li> <li>♦ Interpretation of clinical signs</li> <li>♦ Medical and surgical management of congenital heart disease</li> <li>♦ Pathology, haemodynamics and natural course of acyanotic and cyanotic congenital heart diseases</li> </ul>	
PAED6602	<p>Community Child Health</p> <p><b><i>The following four courses are 6 credits each, candidates are required to take three courses from below.</i></b></p> <ul style="list-style-type: none"> <li>• <i>Adolescent health and behavioural medicine</i></li> </ul> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Eating disorders in adolescents</li> <li>♦ Sexually transmitted disease, high-risk sex and contraception</li> <li>♦ Substance abuse in adolescents</li> </ul> <ul style="list-style-type: none"> <li>• <i>Common child health problems in the community</i></li> </ul> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Common health problem in Hong Kong</li> <li>♦ Common renal and urinary tract problems in children</li> <li>♦ Common skin problems in children</li> <li>♦ Long-term outcome of childhood cancer survival</li> <li>♦ Obesity epidemic and growth problem in the Community</li> </ul> <ul style="list-style-type: none"> <li>• <i>Environment and child-related public health</i></li> </ul> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Asthma and common respiratory diseases in children</li> <li>♦ Common food and allergy problems</li> <li>♦ Environment, childhood allergy and health promotion</li> </ul>	18

	<ul style="list-style-type: none"> <li>♦ Environmental pollution, smoking and child health</li> <li>• Safeguarding children and child development</li> </ul> <p>Topics:</p> <ul style="list-style-type: none"> <li>♦ Child abuse and neglect</li> <li>♦ Childhood injury and prevention</li> <li>♦ Childhood poisoning</li> <li>♦ Early child development</li> <li>♦ Play and child rights</li> </ul>	
PAED6603	<p>Paediatric Haematology/Oncology/Immunology</p> <p><i>The following nine courses are 3 credits each, candidates are required to take 6 courses from below.</i></p> <ul style="list-style-type: none"> <li>• Allergy</li> <li>• Rheumatology/Immunology</li> <li>• Haematology I: Clinical aspects</li> <li>• Haematology II: Basic science</li> <li>• Oncology I</li> <li>• Oncology II and transplantation</li> <li>• Practical statistical applications in paediatric haematology/Oncology/Immunology</li> <li>• Supportive care in paediatric haematology/Oncology/Immunology</li> </ul>	18

## DEPARTMENT OF PATHOLOGY

### PATH6200 *Clinical and Molecular Pathology, Haematopathology, Immunology, and Clinical Cytology*

#### Aim(s)

- ♦ To introduce various haematological disorders by specialist haematopathologists who are in active clinical practice. Diseases of white cells, red cells and platelets are covered.
- ♦ To introduce an overview of immunology and major topics in recent research advances and current techniques.
- ♦ To provide a solid coverage of basic concepts and techniques in immunology as well as several selected topics on cutting-edge research in the field.
- ♦ To provide students with the knowledge and applications of practical immunology, autoantibodies, immunochemistry and cell function.
- ♦ To discuss the genetic basis of cancer and implications for clinical diagnosis, prognostication and disease monitoring.
- ♦ To introduce the chromosomal abnormalities in tumour cells, methods for detection and their clinical significance.
- ♦ To provide students with in-depth understanding of the role of molecular genetics and genomics in (a) Diagnostic Molecular Pathology and (b) Investigative Molecular Pathology.
- ♦ To equip students to meet the high demand on the service of gynaecological cytology in Hong Kong.
- ♦ To discuss the application of molecular techniques in clinical cytology.
- ♦ To examine the peripheral blood and body fluids in haematology.

#### Contents

*If there are insufficient students enrolling in any one Course, it may not be offered and the coordinator will advise the candidate to choose a related one.*

Course Code	Courses	Credit Units
PATH6201	Blood cell and bone marrow pathology	3

	<ul style="list-style-type: none"> <li>♦ Clinical and laboratory approach to haematological diseases</li> <li>♦ Lymphoproliferative neoplasms</li> <li>♦ Myelodysplastic syndromes and acute myeloid leukaemia</li> <li>♦ Myeloproliferative neoplasms</li> <li>♦ Platelets: overview and non-malignant disorders</li> <li>♦ Red cells: overview and non-malignant disorders</li> <li>♦ The haemopoietic system</li> <li>♦ White cells: overview and non-malignant disorders</li> </ul>	
PATH6202	<p>Current topics and techniques in immunology:</p> <ul style="list-style-type: none"> <li>♦ Innate and adaptive immunity</li> <li>♦ B and T cell development and function</li> <li>♦ T cell subsets and functions</li> <li>♦ T regulatory cells: generation and function</li> <li>♦ Inflammation and cancer</li> <li>♦ Infection and immunity</li> <li>♦ Monoclonal antibody technology and flow cytometry</li> <li>♦ Stem cells and their immunoregulatory function</li> <li>♦ Immunohistochemistry in diagnostic pathology</li> </ul>	3
PATH6203	<p>Gynaecological cytology</p> <ul style="list-style-type: none"> <li>♦ CPC: Colposcopy and cervical pathology</li> <li>♦ Normal anatomy and common pathology of female genital tract</li> <li>♦ Practical on microscopy techniques: Full screening and rapid rescreening of cervical smears</li> <li>♦ Reactive cellular changes and infections in cervical cytology</li> <li>♦ Squamous cell abnormalities in cervical cytology</li> <li>♦ Terminology and reporting system used in gynaecological cytology</li> <li>♦ Application of new laboratory techniques including HPV testing</li> <li>♦ Automation in cervical cytology</li> <li>♦ Diagnostic problems and mimickers in cervical cytology</li> <li>♦ Glandular cell abnormalities in cervical cytology</li> <li>♦ Liquid based cytology</li> <li>♦ Treatment-related changes in cervical cytology</li> <li>♦ Quality assurance and organisation of a gynaecological cytology laboratory</li> </ul>	6
PATH6204	<p>Haematological cytology and ancillary techniques in cytopathology</p> <ul style="list-style-type: none"> <li>♦ Application of immunohistochemistry to cytology</li> <li>♦ Application of in-situ hybridization as ancillary test</li> <li>♦ Application of genetic techniques in clinical cytology</li> <li>♦ Automation in cervical cytology</li> <li>♦ Examination of peripheral blood and body fluids in haematology</li> <li>♦ Molecular detection of human papilloma virus</li> </ul>	3
PATH6205	<p>Molecular and clinical laboratory immunology methods and applications:</p> <ul style="list-style-type: none"> <li>♦ Applications to allergic diseases</li> <li>♦ Applications to autoimmune diseases</li> <li>♦ Applications to immunodeficiency diseases</li> <li>♦ Applications to monoclonal gammopathy</li> <li>♦ Laboratory immunology - molecular, serological and cellular techniques</li> <li>♦ Quality assurance and accreditation issues</li> </ul>	3
PATH6206	<p>Molecular genetics and cytogenetics of cancer:</p> <ul style="list-style-type: none"> <li>♦ Conventional and molecular cytogenetics practice</li> <li>♦ Cancer epigenetics</li> </ul>	6

	<ul style="list-style-type: none"> <li>♦ Gynaecological tumours and gestational trophoblastic disease</li> <li>♦ Haematological malignancy <ul style="list-style-type: none"> <li>(I) Acute leukaemia</li> <li>(II) Myeloproliferative neoplasms</li> </ul> </li> <li>♦ Liver cancer <ul style="list-style-type: none"> <li>(I) Molecular basis and characterization of new genes</li> <li>(II) Molecular pathogenesis of liver cancer</li> </ul> </li> <li>♦ Molecular genetics of cancer <ul style="list-style-type: none"> <li>(I) Genomic analysis</li> <li>(II) Cancer genomic/genetic analyses for precision treatment</li> </ul> </li> <li>♦ Molecular genetics of lung cancer</li> <li>♦ Nasopharyngeal carcinoma - molecular aspects and relationship to EBV</li> <li>♦ Hypoxia and cancer</li> <li>♦ Paediatric sarcomas and other soft tissue tumours</li> </ul>	
PATH6207	<p>Techniques and applications of molecular pathology:</p> <ul style="list-style-type: none"> <li>♦ Defects in DNA mismatch repair and colonic cancer</li> <li>♦ DNA and its impact on human ID</li> <li>♦ DNA methylation study and its association with cancer</li> <li>♦ Genetic screening for cancer susceptibility <ul style="list-style-type: none"> <li>(I) Familial colorectal cancer</li> <li>(II) Breast and ovarian cancer</li> </ul> </li> <li>♦ Molecular detection of genetic alterations in solid tumours</li> <li>♦ Molecular diagnosis of malignant lymphoma</li> <li>♦ Molecular haematology <ul style="list-style-type: none"> <li>(I) Globin disorders</li> <li>(II) Bleeding and thrombotic disorders</li> </ul> </li> <li>♦ Next generation sequencing and its clinical application</li> <li>♦ Molecular pathology of virus related diseases <ul style="list-style-type: none"> <li>(I) Epstein Barr virus</li> <li>(II) Human papilloma virus practical approaches to DNA array technology</li> </ul> </li> <li>♦ Role of molecular pathology in the diagnosis of diseases</li> </ul>	6

## DEPARTMENT OF PHARMACOLOGY AND PHARMACY

### PHAR6200 *Current Development in Pharmacology, Pharmaceutics and Pharmacoepidemiology*

(Candidates taking this Specialised Field of Study should also take the Core Course PHAR6100 Principles of Drug Action as basic knowledge)

#### Aim(s)

- ♦ To provide a broad overview of the current trends of drug development and the challenges in drug delivery including biologics and nucleic acids. Novel and smart drug delivery systems as well as the development of nanomedicine and the potential nanotoxicity will be discussed.
- ♦ To introduce the concepts of research methodologies and biostatistics that are essential to evidence-based practice, and to equip students with critical appraisal skills to guide evidence-based clinical decision making.
- ♦ To introduce how different regulatory systems coordinate together the maintenance of vascular tone and vascular integrity, the complications due to dysfunction of systemic and pulmonary circulation, and the rationale behind the current and prospective drug treatments for vascular diseases and vascular complications of diabetes, hypertension and dyslipidemia.

#### Contents

Course Code	Courses	Credit Units
PHAR6201	Advanced drug delivery and drug development <ul style="list-style-type: none"> <li>♦ Biopharmaceutical manufacturing and biosimilar</li> <li>♦ Current trends in drug delivery and drug development</li> <li>♦ Development of biologics and nucleic acid-based therapeutics</li> </ul> Nanotechnology and nanomedicines Novel and smart drug delivery systems <ul style="list-style-type: none"> <li>♦ Stimulitriggered drug delivery and targeted drug delivery</li> </ul>	6
PHAR6202	Evidence based practice <ul style="list-style-type: none"> <li>♦ Concepts of research methodologies and biostatistics for evidence-based practice</li> <li>♦ Conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients</li> <li>♦ Critical appraisal of current clinical evidence</li> <li>♦ Various study designs and methodologies used to investigate associations between risk factors and/interventions and disease outcomes</li> <li>♦</li> </ul>	6
PHAR6203	Vascular biology and therapeutics <ul style="list-style-type: none"> <li>♦ Current knowledge and advanced research findings on the neuronal, hormonal and local control of the vascular system under normal and pathological conditions</li> <li>♦ Functions of the systemic and pulmonary vasculature and the complications due to their dysfunctions</li> <li>♦ Regulatory mechanisms for the maintenance of vascular integrity and tone</li> <li>♦ Management of vascular disorders and the complications of dyslipidemia, hypertension and diabetes, in particular thrombosis and atherosclerosis</li> </ul>	6

## DEPARTMENT OF PSYCHIATRY

### PSYS6200 *Sleep Disorder*

#### Aim(s)

- ♦ To provide students with basic knowledge on common sleep disorders.

#### Contents

Course Code	Courses	Credit Units
PSYS6201	Clinical assessment of sleep disorder	6
PSYS6202	Physiological assessment of sleep disorder	6
PSYS6203	Physiology of sleep	6
PSYS6204	Sleep pathology	6
PSYS6205	Treatment of sleep disorder	6

## DEPARTMENT OF SURGERY

### SURG6100 *Breast Surgery*

#### Aim(s)

- ♦ To introduce breast disease including breast cancer.
- ♦ To introduce clinical and academic areas of breast diseases including research.

#### Contents

Course Code	Courses	Credit Units
SURG6101	Breast cancer genetics and its clinical application	3
SURG6102	Breast surgery including reconstruction and cosmetic surgery of the breast	3
SURG6103	Psychological morbidity of breast disease (in conjunction with the Department of Psychiatry)	3
SURG6104	Radiological investigations in breast disease and screening for breast cancer (in conjunction with the Department of Diagnostic Radiology)	3
SURG6105	Surgical anatomy and physiology of the breast	3
SURG6106	Surgical pathology and molecular basis and research of breast disease	3

### SURG6200 *Colorectal Surgery*

#### Aim(s)

- ♦ To introduce the epidemiology and presentation and clinical features of common colorectal diseases.
- ♦ To review the current multidisciplinary management of colorectal cancer.
- ♦ To introduce minimally invasive surgery for colorectal diseases and cancer.
- ♦ To discuss the application of enhanced recovery after surgery programme in the perioperative management of patients with colorectal surgery.

#### Contents

Course Code	Courses	Credit Units
SURG6201	Diagnosis and management of benign diseases of colon, rectum and anus	3
SURG6202	Enhanced postoperative recovery after colorectal surgery	3
SURG6203	Minimally invasive surgery for colorectal diseases	6
SURG6204	Multidisciplinary management of colorectal cancer	3
SURG6205	Surgery for colorectal malignancy	3

### SURG6300 *Ear, Nose and Throat Surgery*

#### Aim(s)

- ♦ To provide in-depth studies of selected conditions of the ear, nose and throat.
- ♦ To introduce the principles and practice of advanced investigative technologies for diagnosis of diseases in the ear, nose and throat organs.
- ♦ To provide in-depth exposure to the clinical practice of speech therapist.

#### Contents

Course Code	Courses	Credit Units
SURG6301	Assessment and rehabilitation of swallowing disorders	3
SURG6302	Assessment of smell and function of nose	3
SURG6303	Anatomy of the ear, nose or throat organ	3
SURG6304	Concepts in speech therapy and speech rehabilitation	3
SURG6305	Endoscopic assessment of upper aerodigestive tract	3
SURG6306	Physiology of the ear, nose or throat organ	3

### SURG6400 *Gastroduodenal Surgery*

#### Aim(s)

- ♦ To provide current and in-depth study on the principles and practice of gastroduodenal surgery.

- ♦ To improve and sustain a high standard in the management of gastroduodenal disorders in Hong Kong and the region.

**Contents**

Course Code	Courses	Credit Units
SURG6401	Anatomy and physiology of the stomach and duodenum	3
SURG6402	Diagnostic and therapeutic endoscopy	3
SURG6403	Gastric tumours	3
SURG6404	Laparoscopic surgery	3
SURG6405	Surgical treatment of benign and malignant conditions	3
SURG6406	Ulcer diseases and their complications	3

**SURG6500 *Head and Neck and Reconstructive Surgery***

**Aim(s)**

- ♦ Head and Neck Surgery:
  - To introduce the spectrum of benign and malignant conditions involving the head and neck region;
  - To introduce the concept of management of common head and neck pathology.
- ♦ Plastic and Reconstructive Surgery:
  - To introduce the basic principle of wound healing and factors affecting wound Healing
  - To introduce the concept of reconstruction of complicated wounds.
  - To introduce the concept of local, pedicled and free flaps.
  - To introduce the concept behind microvascular surgery

**Contents**

Course Code	Courses	Credit Units
SURG6501	Head and Neck Surgery <ul style="list-style-type: none"> <li>• Applied anatomy of the head and neck region</li> <li>• Endoscopic examination of the head and neck region</li> <li>• Management of complications after surgery</li> <li>• Operative surgery, including resection of tumour and reconstruction of the resultant defect</li> <li>• Post-operative assessment of wounds and functional training</li> <li>• Ultrasound examination and fine needle aspiration of pathology in the neck</li> </ul>	18
SURG6502	Plastic and Reconstructive Surgery <ul style="list-style-type: none"> <li>• Congenital deformities and management</li> <li>• Management of burn wounds</li> <li>• Management of common skin cancers</li> <li>• Microvascular surgery</li> <li>• Principles of flap reconstruction</li> <li>• Traumatic injuries and management</li> </ul>	18

**SURG6600 *Hepatobiliary and Pancreatic Surgery***

**Aim(s)**

- ♦ To introduce the epidemiology, pathology and clinical management of hepatocellular carcinoma.
- ♦ To introduce the role of liver transplantation in the management of hepatocellular carcinoma.

**Contents**

Course Code	Courses	Credit Units
SURG6601	Liver transplantation	3
SURG6602	Local ablative treatment e.g. microwave and high intensity focused ultrasound	3
SURG6603	Operative techniques for major hepatectomy	3
SURG6604	Preoperative assessment of liver function before hepatectomy	3
SURG6605	Study of specific clinical problems, e.g. hepatocellular carcinoma, combined hepato-cholangiocarcinoma, acute-on-chronic liver failure, carcinoma of pancreas, periampullary cancer	3
SURG6606	Surgical anatomy of the liver, biliary tract and pancreas	3
SURG6607	Whipple operation and other major hepatobiliary procedures	3

### SURG6700 *Neurosurgery*

#### Aim(s) (SURG6701-6703)

- ♦ To introduce the principles of management of a common neurosurgical condition. Candidates may choose to focus on any one of the following areas: brain tumours, neurotrauma or stroke.
- ♦ To introduce research methodology and platforms (experimental and/or clinical) in the studying of novel treatment approach for the candidate's chosen condition.

#### Aim(s) (SURG6704)

- ♦ To understand the clinical presentation and pathophysiological basis of ischaemic and haemorrhagic stroke
- ♦ To acquire in-depth knowledge of cerebral vasculature anatomy and the clinical relevance
- ♦ To develop a basic understanding of endovascular treatment of acute ischaemic and haemorrhagic stroke

#### Contents

Course Code	Courses	Credit Units
SURG6701	Translational research in the treatment of malignant glioma	18
SURG6702	Translational research in the treatment of brain trauma	18
SURG6703	Translational research in the treatment of haemorrhagic stroke	18
SURG6704	Clinical research in ischaemic stroke <ul style="list-style-type: none"> <li>• Cerebrovascular anatomy</li> <li>• Clinical presentation of stroke</li> <li>• Research literature review</li> <li>• Research project</li> <li>• Endovascular treatment workshop</li> </ul>	18

### SURG6800 *Oesophageal Surgery*

#### Aim(s)

- ♦ To introduce the variety of oesophageal pathologies.
- ♦ To introduce diagnostic and therapeutic options for benign and malignant conditions that affect the oesophagus and foregut.

#### Contents

Course Code	Courses	Credit Units
SURG6801	Diagnostic work up for patients with reflux and motility oesophageal disorders	3
SURG6802	Diagnostic work up of patients with oesophageal cancer	3

SURG6803	Epidemiology of oesophageal cancer	3
SURG6804	Minimally invasive surgery of treatment of reflux and motility disorders of the oesophagus	3
SURG6805	Open and minimally invasive surgery	3
SURG6806	Pathophysiology of gastroesophageal reflux disease and epidemiology, and motility disorders of the oesophagus	3

### SURG6900 *Paediatric Surgery*

#### Aim(s)

- ♦ To introduce the principles and practice of paediatric surgery.
- ♦ To introduce the essentials for undertaking a research project related to the field of paediatric surgery.

#### Contents

Course Code	Courses	Credit Units
SURG6901	Developmental biology for congenital anomalies and paediatric surgical conditions	3
SURG6902	Endosurgery in children and neonates	3
SURG6903	General paediatric surgery	3
SURG6904	Molecular genetics for congenital anomalies and paediatric surgical conditions	3
SURG6905	Neonatal surgery	3
SURG6906	Paediatric hepatobiliary surgery	3
SURG6907	Paediatric urology	3

### SURG6020 *Urology*

#### Aim(s)

- ♦ To provide in-depth study into pathophysiology, clinical diagnosis, investigation and treatment of common urological diseases.
- ♦ To introduce the principles and practice of advanced disease diagnostics in urology and to promote surgical innovation.

#### Contents

Course Code	Courses	Credit Units
SURG6021	Benign and malignant prostate diseases: advanced diagnostics and management (In conjunction with Department of Diagnostic Radiology)	3
SURG6022	Management of urolithiasis	3
SURG6023	Principles of neuro-urology, female urology and reconstructive urology	3
SURG6024	Andrology and surgical treatment of male-factor infertility	3
SURG6025	Clinical and scientific basis of malignant urological diseases	3
SURG6026	Operative surgery: Minimally-invasive and robot-assisted surgery, and surgical innovation (In conjunction with Department of Engineering)	3

### SURG6030 *Surgical Endocrinology*

#### Aim(s)

- ♦ To introduce the pathophysiology of a wide range of surgical endocrine tumours and conditions (benign nodular thyroid disease, thyroid carcinoma, primary hyperparathyroidism, secondary and tertiary hyperparathyroidism, adrenal functional

tumours, adrenal metastases, adrenocortical carcinoma, pancreatic neuroendocrine tumours).

- ♦ To introduce the principles behind various investigational tools for endocrine tumours and conditions.
- ♦ To discuss relevant endocrine pathology, medical oncology, radiation oncology and endocrinology in various surgical endocrine problems.

### Contents

Course Code	Courses	Credit Units
SURG6031	Clinical research and statistics	3
SURG6032	Choice of localization studies for surgical endocrine diseases	3
SURG6033	Choice of surgery for various endocrine related tumours	3
SURG6034	Factors affecting prognosis of various endocrine related tumours	3
SURG6035	Physiology and pathology of thyroid diseases	3
SURG6036	Understand the concept behind endoscopic and laparoscopic endocrine surgical procedures	3

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

#### Aim(s)

- ♦ To introduce vascular diseases and non-invasive diagnostic tests.
- ♦ To discuss the basic principles underlying various techniques.
- ♦ To guide students in the selection and interpretation of various diagnostic approaches.

### Contents

Course Code	Courses	Credit Units
SURG6071	Anatomy and physiology	3
SURG6072	Principles of non-invasive diagnostic tests	15
SURG6073	Vascular and related diseases	6

### SURG7100 *Genetic Counselling*

*(Candidates taking this Specialised Field of Study should also take the Core Course PAED7100 Principles to Genetic Counselling as basic knowledge)*

#### Aim(s)

- ♦ To have an in-depth study of genetic counselling in prenatal, paediatrics and cancer genetics setting.
- ♦ To effectively communicate genetic information to patients and families and provide psychosocial support.
- ♦ To understand genetics in a personal, familial and societal perspective.

### Contents

Course Code	Courses	Credit Units
SURG7101	Risk calculation and effective communication in genetic counselling	3
SURG7102	Advancements in Genomics	3
SURG7103	Genetics in medicine 1 (Prenatal)	3
SURG7104	Genetics in medicine 2 (Paediatrics)	3
SURG7105	Genetics in medicine 3 (Cancer)	3
SURG7106	Clinical Attachments	3

The dissertation shall comprise a record of substantial experimental or clinical-based research work on the project, or a review of the existing literature on the subject of the project, presented in a form suitable for publication. The dissertation (39 credit units) should be of between 6,000 (minimum) to 10,000 words (maximum) (excluding references), and include two abstracts one in laymen's language and another a scientific abstract of about 200 words each.