

Programme Specification 2020-21

MEDICAL SCIENCES TRIPOS

Awarding body	University of Cambridge
Teaching institution	Faculty of Biological Sciences
Accreditation details	General Medical Council
Name of final award	B.A. (Hons) (for all students) 2 nd MB
Programme title	Medical Sciences
UCAS code	A100MB/ BChir
HECoS code(s)	100276 (pre-clinical medicine); 100267 (clinical medicine)
Relevant QAA benchmark statement(s)	Medicine
Qualifications framework level	6 (Honours)
Date specification produced	April 2021

Programme Aims of Medical Sciences (Part I)

In the first two years, medics study for both the Tripos and for the professional qualification of 2nd MB. Some courses are assessed for both qualifications; some are for professional purposes only.

The programme aims to:

- 1) provide high quality education in clinically relevant biosciences leading to intellectually self-reliant graduates of the calibre sought by the profession.
- 2) provide a stimulating and challenging learning environment where teaching is informed and enhanced by research to international standards of excellence.
- 3) provide training and experience in the scientific principles and practice of research and its evaluation.
- 4) continue to attract outstanding students from a variety of backgrounds, and to develop their potential to enable them to contribute fully to the cultural and intellectual base of society.
- 5) contribute to the national and international needs for practitioners and leaders in the medical professions.

Programme Outcomes for Medical Sciences (Part I)

By the end of the first two years (MedST Part IA and IB) preclinical students should have:

- 1) knowledge and understanding of the basic principles and processes of biomedical science;
- 2) been introduced to common forms of disease and the contribution made by biomedical science to understanding their basis;
- 3) begun to develop observational and deductive skills in associating molecular and cellular events with the outcomes of disease;
- 4) acquired basic laboratory manipulative skills and begun to develop skills in analysis and interpretation of experimental data;

- 5) acquired basic information technology skills in searching for and retrieving information;
- 6) begun to develop skills in oral and written communication and in learning through curiosity;
- 7) begun to develop skills in listening to and dealing with patients;
- 8) become aware of the standards of competence, care, conduct and responsibilities expected of a member of the medical profession;
- 9) become enabled to progress to clinical training.

Teaching and Learning Methods

Each subject within Part I of the course employs a variety of teaching and learning methods, including lectures, small-group teaching sessions (supervisions), computer work, practical classes, and problem based learning. Self-directed learning modules and other additional audio-visual resources are provided in the Virtual Learning Environment (Moodle) as part of a blended learning programme. In addition, medical students undertake a programme of patient contact (PfP).

At Part II, in addition to lectures, students undertake a dissertation, based on literature review or laboratory project work.

Support for Students and their Learning

There is an extensive provision of student support and guidance, including the following:

- 1) Introductory sessions at the beginning of their first year.
- 2) Learning resources on the Virtual Learning Environment (Moodle) with self-directed modules and additional audio-visual materials.
- 3) Individual course handbooks and websites.
- 4) University, Departmental and College libraries and computing facilities.
- 5) Students are assigned a Director of Studies and a personal Tutor by their College.
- 6) Small group tutorials (supervisions) provided by Colleges with collaboration of Departments.
- 7) Extensive staff contact in practical classes.

Criteria for Admission

Because students will be simultaneously gaining academic and professional qualifications, selection for admission in **medicine** is rather more complex than for most subjects, and involves four separate steps :

- 1) students have to satisfy the course entry requirements, which are:
 - Part A:
Requires General Certificate of Secondary Education (GCSE) passes at grades A, B or C in Double Award Science and Mathematics
(Note: Single awards in GCSE Biology and Physics may be substituted for Double Award Science).
 - Part B:
Requires General Certificate of Education (GCE) A Levels – Chemistry and two of Biology, Physics, and Mathematics.
- 2) students must also meet the criteria that have been formulated by the Council of the Heads of Medical Schools as being necessary in order to start as a medical student
- 3) the Cambridge course is scientifically demanding and nearly all successful candidates obtain at least the standard entry requirement that, since 2015, has been set at A*A*A.

- 4) students must also undergo a check for any criminal record through the Disclosure and Barring Service (or similar if from overseas).

Mechanisms for evaluating and improving the quality of student learning support

Students have termly meetings with their College Tutor and Director of Studies to monitor and review their progress. This is facilitated by reports submitted to the Colleges by the student's supervisors on each course.

The College tutorial and pastoral system is supported by the Medical and Veterinary Student Progress Panel, which maintains a general overview of medical (and veterinary) student progression throughout both the preclinical and clinical course at Cambridge. It also monitors the cases of students who for one reason or another may be having problems with the course. This may be because of illness, personal difficulties or due to repeated examination failures.

Each course in the MedST has a course management (or teaching) committee, which regularly reviews the content of that course, student feedback and comments from examiners. Students are represented on these committees. There are also termly Course Panel meetings for each subject, at which several student representatives are present, and where the responses to feedback questionnaires returned by the year group are discussed.

All courses have External Examiners, who are required to submit a report on the examination to the University. This is normally responded to by the Head of Department, or an appointed deputy with appropriate input from the Director of Education for the School of Biological Sciences. The report and response is scrutinised by the General Board's Education Committee.

The first two years of the course are managed by the MVST Part I Committee. This Committee reports to the Faculty Boards of Biology and Clinical Medicine or Veterinary Medicine and to the Medical Education Committee which take an overview of the whole course, pre-clinical and clinical, and advise on changes necessary to meet the standards and requirements of the relevant professional bodies. Students are represented on these committees and encouraged to survey their colleagues and raise matters for consideration.

All Departments teaching in the Tripos are reviewed by the General Board once every six years.

Assessment

The examination for each subject of MedST 1A and 1B is divided into three sections. Sections I and II are assessed for both the Tripos and the 2nd MB. Section III is assessed for the Tripos only. In some subjects the section I and II papers are combined into a single paper.

- Section I is a theory paper, and is assessed either by MCQ or short notes.
- Section II is a practical or data handling paper, and is usually assessed by MCQ or short notes.
- Section III is an essay paper.

The Third Year

A range of courses is available in year three. Students may take in-depth courses in many of the subjects studied in their first two years; these are offered in the NST Part II courses. Students who wish to maintain breadth of study can combine courses from different

departments in NST Part II BBS. Alternatively, they may choose to take courses in something rather different, such as Anthropology, Management Studies or Philosophy, subject to approval by the relevant Director of Studies, College and Department

Outline of the Part I Medical Sciences Tripos

Individual courses focus on the “core” scientific knowledge, which doctors need to have in order to cope with clinical practice.

Students who do not have A level Biology may take a short preparatory on-line course in **Cell Biology**. Students without A-level Mathematics are encouraged to take a preparatory course in basic mathematics ‘Maths for freshers’.

First Year Courses Second MB and Tripos

- 1) the overall layout of the structures of the body is covered in **Functional Architecture of the Body**
- 2) the chemical and molecular mechanisms underlying the functions of the body and the mechanisms that govern inheritance in **Molecules in Medical Science**
- 3) the mechanisms that underlie communication within the body, and the maintenance of the stability of the internal environment in **Homeostasis**.
- 4) how the diversity of cell types and their organisation within tissues contributes to body function is covered in **Histology**.

Second MB

- 1) The **Preparing for Clinical Practice** course comprises two components:
 - i) Patients, ethics and societal context are introduced in **The Social and Ethical Context of Health and Illness**
 - ii) students begin encountering patients in the community in **Preparing for Patients A (PfPA)**. Subsequent parts of this course take place in the second year (PfPB and PfPC) and in the third year (PfP D), and satisfactory completion of all four parts is required for Second MB qualification.
- 2) basic concepts of epidemiology and biostatistics as tools for critical assessment of the quality of scientific evidence and appropriate inference are introduced in the **Introduction to the Scientific Basis of Medicine**

Second Year Courses Second MB and Tripos

- 1) the mechanisms by which drugs act upon the body are covered in **Mechanisms of Drug Action**
- 2) the biological processes underlying disease are dealt in **Biology of Disease**
- 3) the structure and function of the reproductive system is covered in **Human Reproduction**
- 4) the overall structure of the head and neck is covered in **Head and Neck Anatomy**
- 5) the structure and function of the sense organs and the central nervous system, and the study of mental processes and psychology are covered in **Neurobiology and Human Behaviour**

Second MB

- 1) Medics continue to develop their experience in **Preparing for Patients B and C**

(PfPB and C).

The tables below summarise these courses and their assessment, and details of the aims and content of individual courses are provided in the following sections.

MedST Part IA (First Year) Medical Courses

	Course Name	Assessment	
Enabling courses	Cell Biology	not separately assessed	
Second MB and Tripos courses	Homeostasis (HOM)	2nd M.B.	Tripos
	Molecules in Medical Science (MIMS)	2nd M.B.	Tripos
	Functional Architecture of the Body (FAB)	2nd M.B.	Tripos
	Histology	Assessed with HOM	
Clinical strand	The Social and Ethical Context of Health and Illness (SECHI)	2nd M.B.	
	Preparing for Patients A (PfPA)	2nd M.B.	
	Foundations of Evidence-Based Practice (FEBP)	2nd M.B.	

MedST Part IB (Second Year) Medical Courses

	Course Name	Assessment	
Second MB and Tripos courses	Biology of Disease (BOD)	2nd M.B.	Tripos
	Mechanisms of Drug Action (MODA)	2nd M.B.	Tripos
	Human Reproduction (HR)	2nd M.B.	Tripos
	Neurobiology and Human Behaviour (NHB)	2nd M.B.	Tripos
	NHB Psychology Extension	Assessed with NHB	
	Head and Neck Anatomy (HNA)	2nd M.B.	Tripos
Clinical strand	Preparing for Patients B (PfPB)	2nd M.B.	

Part IA Molecules in Medical Science (MIMS)

(Tripos, 2nd MB)

This course is run by the Department of Biochemistry with contributions from the Departments of, Genetics, Pathology, Pharmacology and Veterinary Medicine, the Clinical School and MRC Human Nutrition Research

Aims

The course aims to provide students with a basic understanding of:

- 1) the molecular architecture of eukaryotic cells and organelles, including membrane structure and dynamics;
- 2) the principles of bioenergetics and enzyme catalysis;
- 3) the chemical nature of biological macromolecules, their three-dimensional construction, and the principles of molecular recognition;
- 4) dietary requirements of man and selected domestic animals;
- 5) the metabolism of dietary and endogenous carbohydrate, lipid and protein;
- 6) the principles and major mechanisms of metabolic control and of molecular signalling by hormones;
- 7) the control of cell proliferation;
- 8) how the DNA in a genome is organised, replicated and repaired;
- 9) how genetic information in the DNA is selectively expressed as functional RNA or proteins;
- 10) how genes are transmitted between generations, and how and when errors can arise;
- 11) how natural polymorphism and genetic variation can give rise to mutant genes, and how these genetic errors are inherited;
- 12) how inherited genetic errors can cause both single gene and multifactorial diseases and the consequences of this inheritance for individuals and populations;
- 13) the tools used in molecular genetics, and their potential applications to medical science;
- 14) from their own laboratory practice, the experimental dimension of the molecular approach to biology;
- 15) the significance for clinical practice of the molecular approach to medical science;

Learning outcomes

By the end of the course, students should be able to:

- 1) demonstrate knowledge and understanding of the molecular machinery of living cells;
- 2) demonstrate knowledge and understanding of the principles that govern the structures of macromolecules and their participation in molecular recognition;
- 3) demonstrate knowledge and understanding of the principles and basic mechanisms of metabolic control and molecular signalling;
- 4) use basic laboratory skills and apparatus to obtain reproducible data from biochemical experiments;
- 5) implement experimental protocols, and adapt them to plan and carry out simple investigations;
- 6) analyse, interpret, and report to their peers on the results of their laboratory experiments;
- 7) participate in and report orally on team work investigations of problem-based assignments;
- 8) build on their knowledge and understanding in tackling more advanced and specialised courses, and to more widely pursue independent, self-directed and critical learning.

Teaching and Learning Methods

These include lectures, supervisions, practicals and linked discussions which include data interpretation and handling, problem-based learning, online exercises and a computer-based bioinformatics exercise.

Assessment

Assessment for this course is through MCQs, data handling exercises and an essay paper.

Part IA Homeostasis (HOM)
(Tripos, 2nd MB)

This course is run by the Department of Physiology, Development and Neuroscience.

Aims

The course aims to:

- 1) provide students with an understanding of the fundamental scientific concepts, the core knowledge and clinical relevance of the homeostatic mechanisms and physiological functioning of the body, excluding the reproductive system, the sense organs and the central nervous system;
- 2) to develop students' investigative skills and familiarity with standard laboratory and clinical techniques of observation and measurement, and gain practice and confidence in applying these skills, in a quantitative manner where appropriate.

Learning outcomes

By the end of the course of lectures students should understand the principles and have a core of knowledge of the individual topics set out in the course synopsis. They should also:

- 1) acquire a sense of the broad nature of homeostasis, of the integrated way in which the systems of the body interact in response to changes in conditions, and the types of inter- and intra-cellular communication that make this possible;
- 2) gain a preliminary sense of the consequences of malfunction of these systems;
- 3) meet the objectives for each set of lectures, which are set out in the individual lecture handouts.

Practicals

By the end of the course students should have:

- 1) learnt to observe and make intelligent deductions, relating the way in which real tissues behave to the necessarily abstracted descriptions in their lectures;
- 2) learnt to design procedures and experiments that efficiently address both pre-defined questions and also open-ended ones;
- 3) learnt the techniques of collection, analysis and presentation of numerical and graphical data, including methods for recognising and dealing with systematic and random errors of measurement;
- 4) gained experience in using modern experimental techniques and familiarity with common items of equipment, including the use of computers for data-acquisition, presentation and analysis, and also in simulations of biological systems;
- 5) learnt how to carry out skilled tasks in co-operation with others, and how to carry out procedures on human subjects with consideration and due regard to health and safety procedures and to ethical considerations;
- 6) by being subjects for experiments. Learnt at first-hand how physiological perturbations are reflected in subjective sensations, and something of what it is to be a patient rather than a doctor;
- 7) gained manual dexterity in standard manipulative procedures, and particularly in the handling of biological tissue;
- 8) learnt to appreciate the intrinsic difficulties of experimental work on animal tissue and human subjects, and also to experience some of the pleasures that such investigation can bring.

Teaching and Learning Methods

These include lectures, supervisions, and practicals.

Assessment

Assessment for this course is through MCQs and short notes questions, data handling and analysis exercises and an essay paper. Students are also required to submit practical notebooks.

Part IA Histology (Tripos, 2nd MB)

This is a practical course run by the Department of Physiology, Development and Neuroscience.

Aims

The course aims to:

- 1) To provide students with an understanding of the microscopic structure of cells and tissues with an emphasis on the correlation between structure and function.
- 2) To provide a practical experience in the examination of the microscopic anatomy and ultrastructure of cells and tissues to complement other Part IA courses
- 3) To provide the basis of understanding of normal tissue structure needed for Part IB courses, such as Biology of Disease and Human Reproduction.

Learning outcomes

By the end of the course, students should be able to:

- 1) Use a binocular microscope.
- 2) Using light microscopy, recognise the principal types of cells and tissues, in tissue sections.
- 3) Form a conception of the structure of a tissue in three dimensions, from a two-dimensional image.
- 4) Interpret electron micrographs, including the identification of different types of cell organelles.
- 5) On the basis of 2, 3 and 4, correlate structural and functional features.
- 6) Recognise and describe the structural features of the cells and tissues involved in the following systems of the body: Integumentary system, Muscular system, Peripheral nervous system, Skeletal system, Respiratory system, Circulatory system, Digestive system, Liver and Urinary systems and Endocrine system.
- 7) Understand the structural features that underlie the properties of cells (e.g. division, differentiation, polarity, secretion, movement) and how cells integrate with the extracellular matrix to form tissues.
- 8) Understand that hereditary diseases can result in alterations to the appearance and functions of cells and tissues, and thus that changes to histological structure are important in the diagnosis of disease.

Teaching and Learning Methods

Each class starts with a preparatory self-study guide using online resources. Students check their understanding of the self-study material with an online quiz with answers/explanation provided subsequently for revision. This is followed by a practical class involving student team-work in groups of three or four, and with the guidance and support from Demonstrators. The practical involves: examination of tissue specimens under a light microscope; examination of digital slides and of electron micrographs; and exercises to consolidate knowledge and introduce comparison between normal and disease tissues. Annotated digital slides are subsequently provided for revision.

Assessment

Assessment for this course is through MCQs. Histology is assessed as a component of Section II of the MedST Part IA Homeostasis examination. In recent years, Histology has contributed 10% to the Tripos mark for Homeostasis and 20% to the Second MB.

Part IA Functional Architecture of the Body (FAB) (Medics only)
(Tripos and 2nd MB)

This course is run by the Department of Physiology, Development and Neuroscience.

Aims

The course aims to provide students with:

- 1) an understanding of the structure and organisation of the human body, including the identification of its components and tissues and their principal relationships in dissected cadavers, living subjects and imaged material,
- 2) an understanding of the relationship of structure to function,
- 3) an awareness of the range of normal variation among individuals and within an individual through life,
- 4) an awareness of how the body plan is established in embryonic development,
- 5) an awareness of the scientific and practical bases of anatomical knowledge including the principles of observation, correlation and experimentation and the skills used in gaining this knowledge,
- 6) an awareness of how anatomical knowledge may be applied effectively in clinical and scientific contexts,
- 7) an awareness of how ethical and attitudinal issues impinge on the study of anatomy, on the application of anatomical knowledge, and on communication about it,
- 8) the beginnings of an understanding of how to pursue independent, self-directed, reflective and critical learning,
- 9) the beginnings of an understanding of how to work effectively and co-operatively in small groups.

Learning Outcomes

By the end of the course, students should be able to:

- 1) demonstrate a knowledge and understanding of the body, particularly the anatomy underlying common clinical problems and procedures,
- 2) recognise common variations and understand the causes,
- 3) understand how defects in embryonic development can lead to congenital anomalies,
- 4) observe surface markings, feel and identify anatomical features, ,
- 5) interpret common diagnostic images,
- 6) know the anatomical bases and understand the general principles of clinical examination and clinical procedures,
- 7) communicate effectively, sensitively and ethically about the body using the appropriate language to colleagues and lay persons,
- 8) communicate relevant information in concise, unambiguous writing, with sketched illustrations.

Teaching and Learning Methods

These include lectures, supervisions, practical cadaveric dissection, prosections, applied anatomy classes and clinical demonstrations. Self-directed learning modules and additional audio-visual resources are also available on the Virtual Learning Environment hosted on the Moodle platform, as part of a blended learning programme.

Assessment

Assessment for this course is through a combined MCQ "steeplechase" practical examination

using prosected specimens, and essays.

Part IA Social and Ethical Context of Health and Illness (SECHI)
(2nd MB only)

This course is run by the Clinical School.

Aim

This course serves as an introduction to the relevance and value of a social science perspective for medical practice. It draws on a range of disciplines to explore how ideas of health, illness and treatment are differently understood, and the impact this can have on health care provision. It explores the influence of demographic and cultural variables, and consequently aims to demonstrate some of the links between medicine and its social context. In addition it introduces students to the principle of medical ethics.

The course aims to address objectives outlined in [*Tomorrow's Doctors*](#).

Learning outcomes

By the end of the course, students should be able to:

- Demonstrate a basic knowledge of relevant material, including key texts and authors
- Critically engage with a range of social science perspectives
- the principles of medical ethics, informed consent, confidentiality and the clinical relationship;
- Demonstrate an understanding of current ethical issues
- Apply theoretical ideas and concepts to practical examples, including relevant contemporary issues
- Establish links with concurrent and future components of their studies

Teaching and Learning Methods

These include lectures, seminar-style supervisions, and on-line self-learning support materials.

Assessment

Assessment for this course is two submitted essays.

Part IA Foundations of Evidence-Based Practice (FEBP) (2nd MB)

This course is run by the School of Clinical Medicine. It is in two strands, Epidemiology and Medical Statistics.

Aim

To produce informed consumers of research who are equipped with an understanding of the fundamental principles underlying epidemiological and clinical research methods.

Objectives

- 1) to provide an understanding of basic concepts in epidemiology and their relevance to clinical practice and disease prevention in patients and in the community;
- 2) to introduce tools for critical assessment and evaluation of the quality of the scientific literature and appropriate application of findings to medical practice.

Learning outcomes

- 1) Describe at least one system for defining a focused clinical research question, e.g. PICO
- 2) Generate a focused clinical research question
- 3) Discuss a range of research methods and assess their suitability for addressing a given research question
- 4) Describe approaches to sampling and discuss the benefits and limitations of these
- 5) Describe a process for searching the literature for evidence relating to a research question
- 6) List the range of observational and interventional study designs and discuss the key features, strengths and limitations of each
- 7) Describe the rationale for and critique the use of statistics and statistical tests in research, including descriptive statistics, p values and confidence intervals
- 8) Construct a 2x2 table from data provided, calculate an OR and / or RR as appropriate, and interpret this finding
- 9) Define and discuss concepts of chance, bias, confounding and causality
- 10) Identify suitable statistical tests for hypothesis testing (one and two samples), explain the rationale for the choice and identify assumptions
- 11) Discuss the rationale for screening tests and describe the potential benefits and harms of screening
- 12) Define and interpret screening test characteristics such as sensitivity, specificity, predictive value and discuss their relevance to practice
- 13) Discuss the use of evidence in clinical practice including consideration of the benefits and limitations of this approach
- 14) Describe typical academic outputs and identify opportunities for their own research activity over their entire course

Teaching and Learning Methods

Lectures and supervisions.

Assessment

Assessment for this course is by unseen examination requiring candidates to write two essays.

Preparing for Patients (2nd MB)

This course is run by the Clinical School over the three years of the pre-clinical course. It is divided into four strands. The course aims to give students the opportunity to relate the core science courses to real patients' experiences of health problems, and to prepare them for clinical study by starting to develop the communication skills they will need to interact successfully with patients.

First Year Strand: General Practice (PfPA) - Students visit a GP's Surgery

Aims

- 1) to support students to interact respectfully and ethically with patients;
- 2) to allow students to take their first step to conduct a medical interview
- 3) to show the linkage between core science learning and clinical practice including patients' health problems and experiences.

Objectives

By the end of the PfPA programme, students should be able to:

- 1) conduct a simple medical interview, discussing with patients their health problems, their experience of them and their expectations of health care;
- 2) demonstrate understanding of the principles of consent and confidentiality and the practicalities of respecting consent and preserving confidentiality;
- 3) identify what influenced the success of their interviews from the perspective of the patient and themselves
- 4) look across their experiences with different patients in General Practice to identify a challenge during an interview and potential solutions.

Second Year Strand: Hospital Medicine (PfPB)

Students visit a hospital

Aims

- 1) to enable students to further explore patients' experience and understanding of illness;
- 2) to continue and extend students' introduction to the medical interview;
- 3) to link students' core science learning to patients' experiences of illness.

Objectives

By the end of the PfPB programme, students should be able to:

- 1) conduct a more complex medical interview than in PfPA, discussing with patients the reasons for their admission to hospital, the symptoms that they have suffered, their experience of their health problems and their expectations of health care;
- 2) understand the feelings and experiences of being a patient in hospital and identify good practice that helps to improve patients' experiences;
- 3) identify what influenced the success of your interviews from the point of view of the patient and, from your own perspective, in gathering information about disease and illness;
- 4) explain a characteristic of a patient's illness in terms of your knowledge of core science relevant to medicine.

Second/Third Year Strand: Non-clinical Community Experience (PfPC)

Students visit a statutory, voluntary or other health related agency

Aims

To provide students with the opportunity to experience health care in a wider context within society by exploring, from a user's perspective, agencies, groups, organisations and networks that are involved in supporting people with health problems in the community.

Objectives

By the end of the programme students will be able to:

- 1) describe the services provided to support people with health problems by the agency, group, organisation or network visited in the community;
- 2) assess the strengths and weaknesses of such services and how they interface with the work of primary and secondary health care teams;
- 3) define the evidence that would help a medical practitioner evaluate the value of the service to users
- 4) understand the ease or difficulty that clients have in accessing these services.
- 5) reflect on how visiting these agencies, groups, organisations or networks has affected their understanding of the provision of health care in society

Third Year Strand: Continuity of Care (PfPD)

Students follow a pregnancy over time, visiting women in their own homes.

Aims

- 1) To continue and extend students introduction in conducting the medical interview
- 2) To enable students' to appreciate the importance of developing an ongoing patient-doctor relationship

Objectives

By the end of the programme students will:

- 1) have built a relationship with a patient over a period of time, developing a deeper understanding than can be achieved in just one meeting
- 2) conducted a series of extended medical interviews, discussing with one woman her

- pregnancy, her experience of it and her expectations of maternity care;
- 3) explored the different roles of professionals involved with pregnancy;
 - 4) considered how the family as a whole is affected by a pregnancy;

Teaching

Briefing and review sessions

Assessment

Assessed structured reports

MedST 1B – Biology of Disease (BOD)
(Tripos and 2nd MB)

This course is run by the Department of Pathology.

Aims

- 1) to describe the mechanisms underlying disease processes in terms of molecular and cellular biology and deviation from normal physiology;
- 2) to convey an understanding of the natural history and dynamic nature of disease.

Learning Objectives

By the end of this course of lectures and practicals students should be able to:

- 1) demonstrate knowledge and understanding of the cellular response to injury;
- 2) demonstrate knowledge and understanding of the processes of innate and adaptive immunity, including appropriate and inappropriate immune responses;
- 3) demonstrate knowledge and understanding of the basic structure of viruses, bacteria, parasites; how these pathogens evade host defences and cause disease; and the principles underlying the transmission, epidemiology and control of infectious disease;
- 4) demonstrate knowledge and understanding of the processes responsible for the deregulation of cellular growth and differentiation, and the manifestations and effects of this in the genesis and growth of tumours;
- 5) demonstrate knowledge and understanding of the processes whereby normal blood circulation may be disrupted through pathology in blood vessel walls, disorders of haemostasis, or otherwise altered cardio-vascular physiology, and the ensuing processes of thrombosis, embolism, ischaemia and infarction;
- 6) identify and concisely describe these basic processes as manifested by altered cell tissue and organ structure;
- 7) demonstrate an understanding of the principles and practice of the sterile techniques, antisepsis, the handling of pathogenic viruses and bacterial pathogens;
- 8) demonstrate skills in the basic techniques for growth and identification of common bacterial species and the quantitative analysis of viral infection and growth;
- 9) demonstrate familiarity with the use of antibody/antigen based immunological assays, including those used for the detection of current or past infection, or the analysis of biological samples; and
- 10) solve simple problems that require interpretation of the manifestations of disease at the levels of clinical manifestation and molecular, cellular and tissue dysfunction.

Teaching and Learning methods

Lectures, practicals and supervisions

Assessment

MCQ, essay and practical/data handling papers.

MedST 1B – Human Reproduction

(Tripos and 2nd MB)

This course is run by the Department Physiology, Development and Neuroscience.

Aims

To provide a basic understanding of:

- 1) the biology of human reproduction;
- 2) the genetic context of human reproduction
- 3) how it may be applied to clinical problems.

Learning Objectives

By the end of this course of lectures and practicals students should understand

- 1) how the two sexes are generated, mature and function;
- 2) the relationship between sex, gender and sexuality;
- 3) how the menstrual cycle is regulated and the potential influence of external factors such as stress, relationships and the environment;
- 4) how mature male and female gametes are formed, come together and generate a conceptus;
- 5) the major causes of sub- and infertility and their treatment using ART;
- 6) how the conceptus develops, signals its presence to the mother and establishes a pregnancy through implantation and formation of the placenta;
- 7) how maternal physiology adapts to pregnancy successfully through to parturition;
- 8) the main factors that regulate growth of the fetus and the consequences of growth restriction;
- 9) how labour and delivery are initiated and controlled, and a newborn mammal is nurtured;
- 10) the main types of reproductive loss and morbidity and their causes;
- 11) the principles of demography, and their application to reproduction;
- 12) how birth and death rates and population size have changed with economic and social development.
- 13) The main types and epidemiology of sexually transmitted diseases and their impact on reproduction

Teaching

Lectures, supervisions and practical classes

Assessment

MCQs and essays

MedST 1B – Head and Neck Anatomy (HNA)

(Tripos and 2nd MB)

This course is run by the Department of Physiology, Development and Neuroscience, and is a continuation of the MedST IA Functional Architecture of the Body course for the head and neck Aims

To provide students with:

- 1) an understanding of the structure and organisation of the human head and neck, and of the relationship of structure to function,
- 2) an awareness of the range of normal variation among individuals and within an individual through life,
- 3) an awareness of craniofacial development, and why and how anomalies may arise,
- 4) opportunity to develop their understanding of how to pursue independent, self-directed, reflective and critical learning,
- 5) opportunity to develop their understanding of how to work effectively and co-operatively in small groups.

Learning Objectives

By the end of this course of lectures and practicals students should be able to:

- 1) demonstrate a knowledge and understanding of the human head and neck, particularly the anatomy underlying common clinical problems and procedures,
- 2) understand how defects in embryonic development can lead to congenital anomalies,
- 3) recognise common variations and understand the causes,
- 4) interpret common diagnostic images,
- 5) know the anatomical bases for clinical examination and clinical procedures,
- 6) communicate effectively, sensitively and ethically using the appropriate language to colleagues and lay persons.

Teaching and Learning Methods

These include lectures, supervisions, prosections with 3D imaging, nasoendoscopy *demonstration* and applied anatomy classes. Self-directed learning modules and additional audio-visual resources are also available on the Virtual Learning Environment hosted on the Moodle platform, as part of a blended learning programme

Assessment

Assessment for this course is through a combined MCQs/"steeplechase" practical with photographs and a short written paper.

MedST 1B Neurobiology and Human Behaviour (NHB)
(Tripos, 2nd MB)

This course is run by the Department Physiology, Development and Neuroscience

Aims

- 1) to provide a broad-based course on the structure and function of the central nervous system;
- 2) to provide students with a clear understanding of the basic principles of neurobiology
- 3) to provide students with explanatory frameworks for understanding phenomena such as consciousness, attention, memory and language;
- 4) to enable students to understand the basis for common neurological and behavioural problems.

Objectives

- 1) to introduce the scientific concepts underlying the study of the central nervous system;
- 2) to provide students with an understanding of the principles underlying sensory, motor, motivational and cognitive processes, and how these contribute to behaviour;
- 3) to understand the functional and behavioural consequences of disorders of the nervous system, and how they might be influenced by drugs;
- 4) to provide core knowledge relevant to a career in medicine.

Teaching

Lectures, supervisions and practicals

Assessment

Short notes, written practical and essay paper

MedST 1B – Mechanisms of Drug Action (MODA)
(Tripos, 2nd MB)

This course is run by the Department of Pharmacology

Aims

- 1) to give students a core knowledge in basic pharmacology and so lay a secure foundation in principles of drug action to support future courses in medicine which students will carry with them into their professional careers;
- 2) to allow students to develop their experimental and data analysis skills through a range of experiments carried out in the practical laboratories and attendance at demonstrations and supervisions.

Learning Outcomes

At the end of the course each student is expected to be able to

- 1) demonstrate a broad knowledge of modern pharmacology, from the molecular basis of receptors, to the effect of drugs on whole body systems;
- 2) identify the major classes of drug receptors and sites of drug action within the body;
- 3) identify typical examples of drugs which are used to restore physiological functions in the cardiovascular, renal, respiratory, digestive and peripheral/central nervous systems;
- 4) demonstrate an understanding of the use of drugs to control inflammation and immune response or to kill bacteria, viruses, or malignant cells;
- 5) apply the basic principles that concern the absorption, distribution and elimination of drugs to predict the time course of drug concentrations in the body.

Teaching

Lectures, supervisions and practicals

Assessment

Essays, SBA and data handling and analysis

Every effort has been made to ensure the accuracy of the information in this programme specification. At the time of publication, the programme specification has been approved by the relevant Faculty Board (or equivalent). Programme specifications are reviewed annually, however, during the course of the academical year, any approved changes to the programme will be communicated to enrolled students through email notification or publication in the *Reporter*. The relevant faculty or department will endeavour to update the programme specification accordingly, and prior to the start of the next academical year.

Further information about specifications and an archive of programme specifications for all awards of the University is available online at: <https://www.camdata.admin.cam.ac.uk/>