

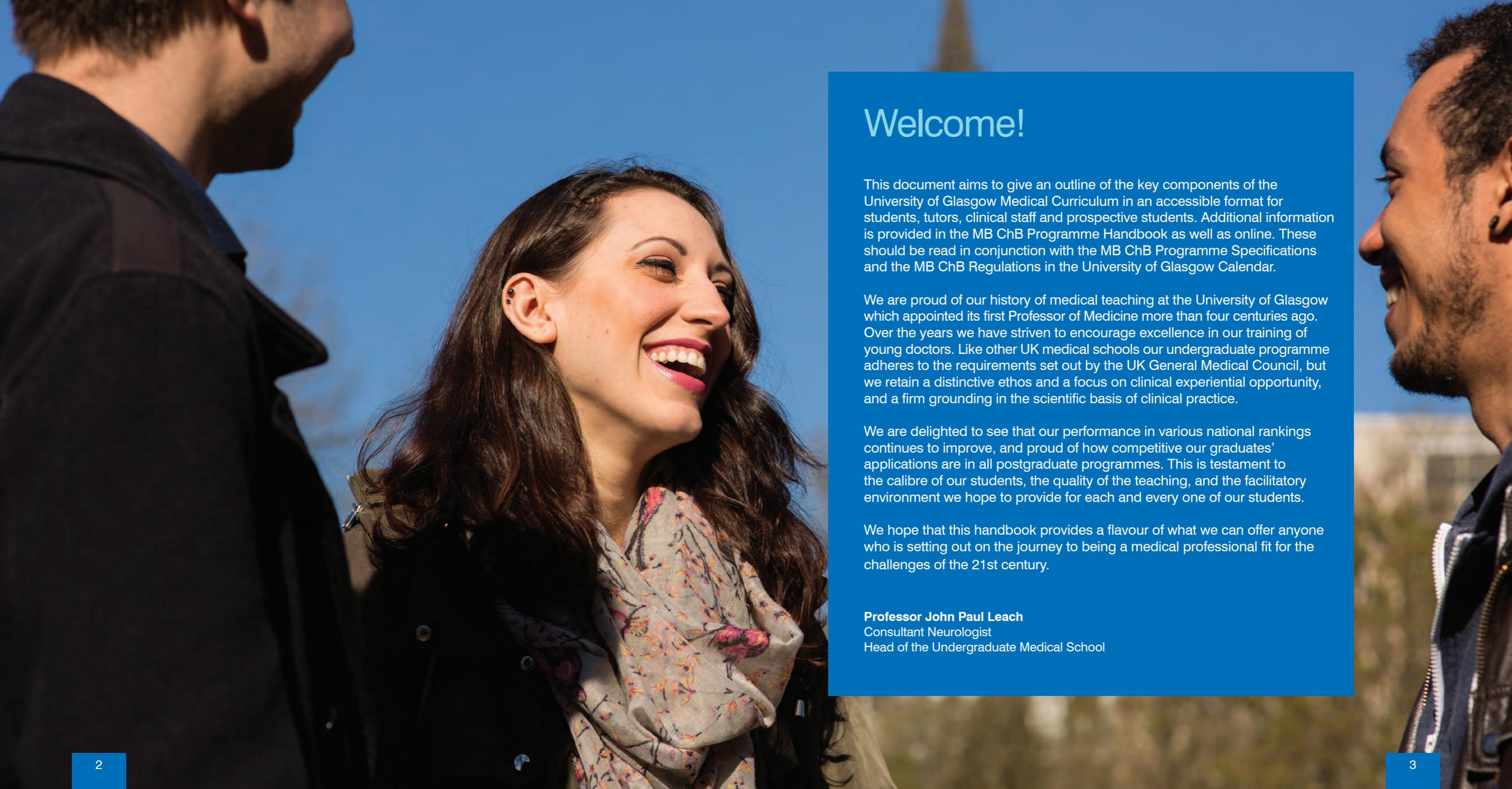


University
of Glasgow

MEDICINE (MB ChB) PROGRAMME

WORLD
CHANGING
GLASGOW

A guide
for students,
tutors and
clinical staff



Welcome!

This document aims to give an outline of the key components of the University of Glasgow Medical Curriculum in an accessible format for students, tutors, clinical staff and prospective students. Additional information is provided in the MB ChB Programme Handbook as well as online. These should be read in conjunction with the MB ChB Programme Specifications and the MB ChB Regulations in the University of Glasgow Calendar.

We are proud of our history of medical teaching at the University of Glasgow which appointed its first Professor of Medicine more than four centuries ago. Over the years we have striven to encourage excellence in our training of young doctors. Like other UK medical schools our undergraduate programme adheres to the requirements set out by the UK General Medical Council, but we retain a distinctive ethos and a focus on clinical experiential opportunity, and a firm grounding in the scientific basis of clinical practice.

We are delighted to see that our performance in various national rankings continues to improve, and proud of how competitive our graduates' applications are in all postgraduate programmes. This is testament to the calibre of our students, the quality of the teaching, and the facilitatory environment we hope to provide for each and every one of our students.

We hope that this handbook provides a flavour of what we can offer anyone who is setting out on the journey to being a medical professional fit for the challenges of the 21st century.

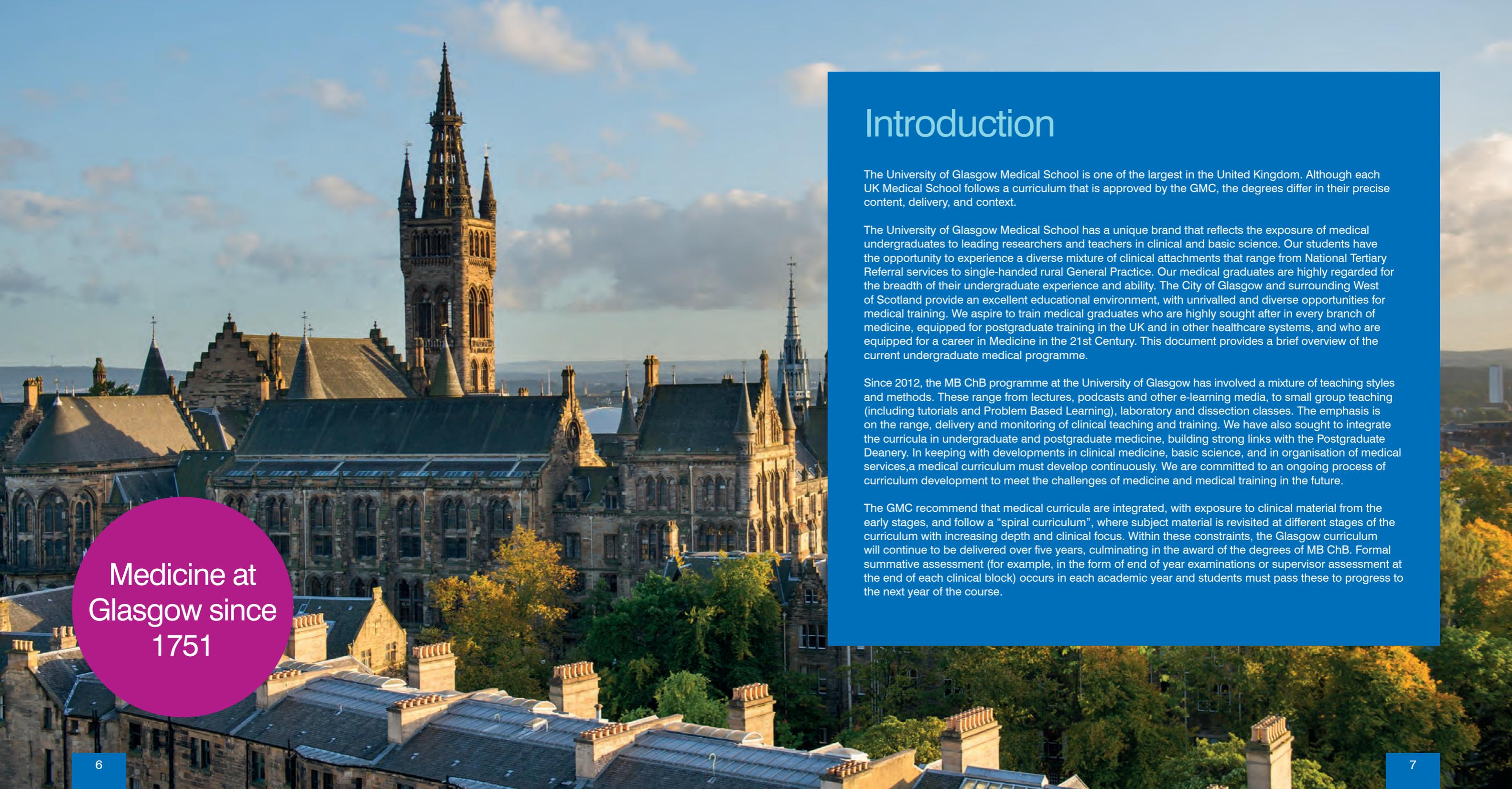
Professor John Paul Leach

Consultant Neurologist

Head of the Undergraduate Medical School

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Introduction

The University of Glasgow Medical School is one of the largest in the United Kingdom. Although each UK Medical School follows a curriculum that is approved by the GMC, the degrees differ in their precise content, delivery, and context.

The University of Glasgow Medical School has a unique brand that reflects the exposure of medical undergraduates to leading researchers and teachers in clinical and basic science. Our students have the opportunity to experience a diverse mixture of clinical attachments that range from National Tertiary Referral services to single-handed rural General Practice. Our medical graduates are highly regarded for the breadth of their undergraduate experience and ability. The City of Glasgow and surrounding West of Scotland provide an excellent educational environment, with unrivalled and diverse opportunities for medical training. We aspire to train medical graduates who are highly sought after in every branch of medicine, equipped for postgraduate training in the UK and in other healthcare systems, and who are equipped for a career in Medicine in the 21st Century. This document provides a brief overview of the current undergraduate medical programme.

Since 2012, the MB ChB programme at the University of Glasgow has involved a mixture of teaching styles and methods. These range from lectures, podcasts and other e-learning media, to small group teaching (including tutorials and Problem Based Learning), laboratory and dissection classes. The emphasis is on the range, delivery and monitoring of clinical teaching and training. We have also sought to integrate the curricula in undergraduate and postgraduate medicine, building strong links with the Postgraduate Deanery. In keeping with developments in clinical medicine, basic science, and in organisation of medical services, a medical curriculum must develop continuously. We are committed to an ongoing process of curriculum development to meet the challenges of medicine and medical training in the future.

The GMC recommend that medical curricula are integrated, with exposure to clinical material from the early stages, and follow a “spiral curriculum”, where subject material is revisited at different stages of the curriculum with increasing depth and clinical focus. Within these constraints, the Glasgow curriculum will continue to be delivered over five years, culminating in the award of the degrees of MB ChB. Formal summative assessment (for example, in the form of end of year examinations or supervisor assessment at the end of each clinical block) occurs in each academic year and students must pass these to progress to the next year of the course.

Medicine at
Glasgow since
1751

Overview of the Glasgow MB ChB programme

The MB ChB programme (specifically the “loops” of the spiral curriculum) has been organised into four Phases. These overlap the five years of the course, and reflect the development of students as they progress through the curriculum, whilst the academic years remain central to the organisation of teaching, for assessment and for progress. We have also developed the concept of Vertical Themes. These are subject areas which continue through the full five years of the programme, and include: Clinical Skills; Vocational and Professional Studies (including Communications Skills); Health of Populations and Communities (Public Health); Pharmacology; Clinical Pharmacology and Prescribing (PPP); Anatomy and Imaging (A&I); and Basic Biomedical Sciences (including biochemistry, immunology, cell biology, microbiology, molecular biology and physiology).

The first two Phases and two years of the course are based largely in the Wolfson Medical School Building (WMSB) or elsewhere on campus. Phase 3 marks the transition into clinically-based tuition,

and is based in the New Lister Building at the Glasgow Royal Infirmary, and at the Teaching and Learning Centre of the Queen Elizabeth University Hospital. In Phase 4, students are primarily on attachments to hospitals and general practices, with regular teaching sessions provided in teaching facilities attached to NHS hospitals, and dedicated teaching centres in district general hospitals (DGH) with occasional teaching weeks at the WMSB. The Phase structure is as follows:

Phase 1 occupies the first half of Year 1. It is an overview of basic biomedical sciences, and an introduction to the undergraduate programme. It provides students with the basic knowledge required to engage in the rest of the undergraduate programme, bringing all students to a comparable level of knowledge in biomedical sciences. Students also have one session per week where they undertake Vocational and Professional Studies. They have their first Clinical Skills sessions and undertake a clinical visit to an A&E ward or General Practice.

Phase 2 occupies the second part of Year 1 and the whole of Year 2. It is a system-by-system programme that covers the anatomy, physiology, pharmacology, biochemistry (and related biomedical sciences) of the major clinical (body) systems. It also includes sessions of Vocational and Professional Studies, Communication and Clinical Skills that are matched – as far as possible – to the system being studied.

Phase 3 occupies the first half of Year 3 and is a system by system cycle through clinical systems with the focus on pathophysiology, building on knowledge acquired in Phase 1 & 2. There are major contributions from pathology, microbiology, haematology, clinical biochemistry and clinical pharmacology, and the small group teaching is focused on clinical cases, using case-based learning (CBL), with a clinical tutor. Students also have one day per week in hospital or general practice where teaching focuses on the ability to take a detailed clinical history and perform basic clinical examination. Students also receive clinical procedural skills teaching.

Phase 4 also known as the ‘clinical years’ occupies the second half of Year 3, all of Year 4 and the first half of Year 5 (until the final examinations). It is based in hospitals and in general practice, with occasional dedicated teaching weeks in the WMSB. Teaching is structured around 5-10 week clinical attachments. All students rotate through general medicine and surgery, obstetrics and gynaecology, child health, general practice, psychiatry, and a variety of hospital sub-specialities (see p27).

Wellbeing
We are dedicated to producing able and competent medical professionals, but we recognise that the course should help our graduates become equipped to cope with the demands and rigours of careers in clinical practice. Our philosophy is to encourage maintenance of a good work-life balance, and is evidenced by our commitment to regular extra curricular activities. We know that medical training often takes place outwith normal working hours, and in recognition of this we would expect that most Wednesday afternoons can be set aside (in whole or in part) to allow participation in sporting and other activities. While formal teaching and clinical demands will sometimes unavoidably intrude on this, we hope that development of such good habits and vital life-skills will serve our graduates (and their patients) well in years to come.

91% ‘Overall Satisfaction’*

*2018 National Student Survey



Preparation for Practice:

Following the Final Examination students take a course termed Preparation for Practice (PfP). This involves a short lecture programme, followed by a period spent shadowing Foundation Year (junior) doctors in hospital, ideally attached to the hospital units in which they will work. Successful completion of PfP is a prerequisite to graduate, for pre-registration with the GMC, and to enter postgraduate training.

Student Selected Components and Electives:

During the MB ChB programme, students have three 5 week Student Selected Components (SSC) one in each of Years 2, 3 and 4. Each student will also undertake two 4 week elective periods – taken in the summers of Years 3 and 4; see p39. There is a wide choice of options available to students, and many students develop their own SSCs and electives. SSCs and electives may be used to undertake a research project, and to develop specialty interests. Approximately half the class undertake an elective study period abroad.

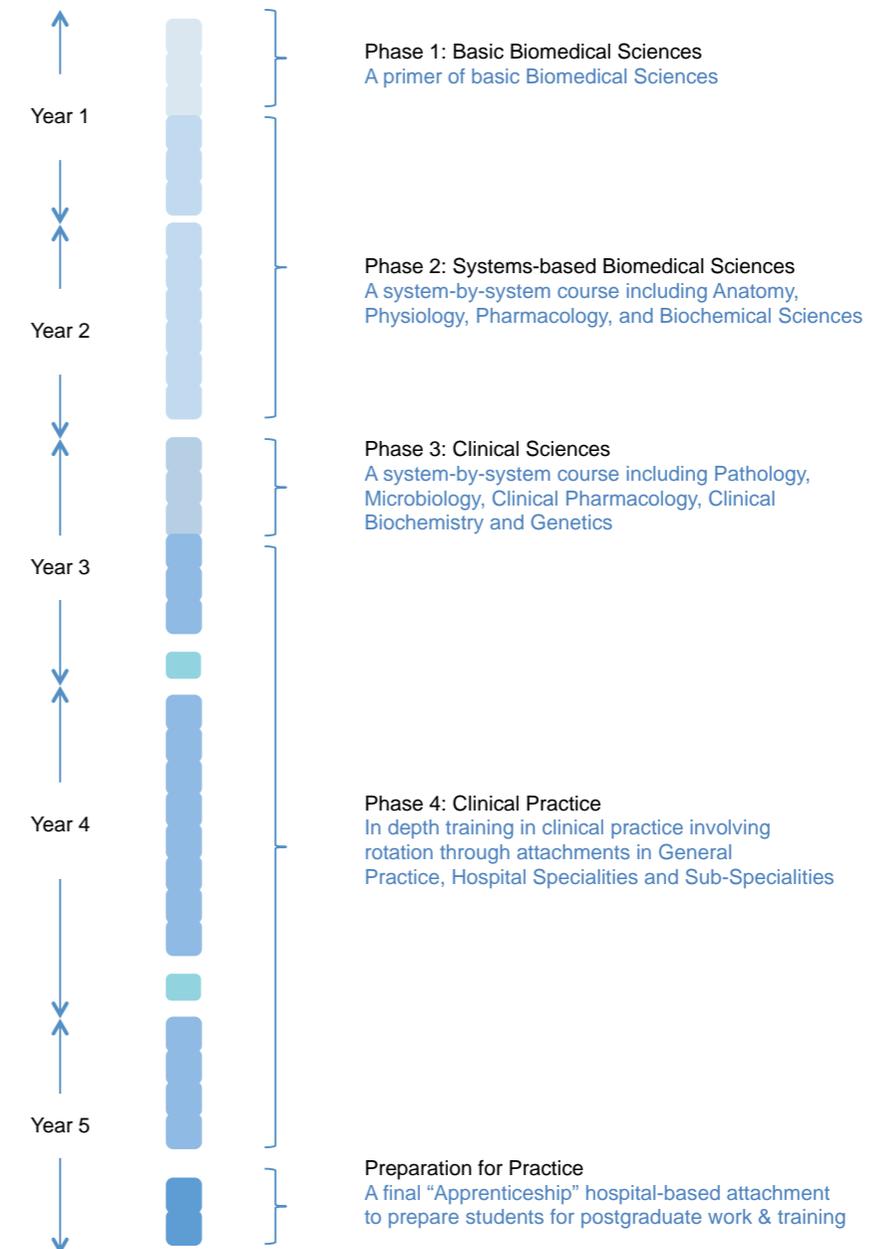
Intercalated BSc:

The School of Medicine also offers a one year intercalated BSc degree. Entry to this is competitive. This is taken between Years 3 and 4 of the MB ChB programme, and involves an intensive period of study and training in a scientific discipline. We offer an intercalated BSc (Med Sci) in the School of Medicine, Dentistry & Nursing in clinical specialities; in the School of Life Sciences in basic biomedical sciences such as Physiology and Anatomy; and in the School of Critical Studies in Medical Humanities.

The MB ChB programme structure is illustrated in the figure opposite.



MB ChB Glasgow - Programme Structure



Teaching components

We use a variety of teaching methods in the delivery of the MB ChB programme:

Lectures: The main form of didactic teaching is the lecture, which typically lasts up to one hour, and is focussed on specific topics. Lectures are delivered by University and by NHS clinical staff. Whilst attendance at lectures is expected, the lectures are made available to students online and remain for that year and the following session.

Small Group Teaching: Small group teaching features throughout the curriculum and in postgraduate life. In the Glasgow Curriculum this includes problem-based learning (PBL), vocational studies (VS), case-based learning (CBL), clinical and communication skills and team-based learning (TBL) – of which the clinico-pathological conference is the best example.

In the first two years we use PBL as one of the forms of curriculum delivery. PBL tutorials are small group sessions with a facilitator, and are based around clinical scenarios. The facilitator is likely to have expertise in at least one of the disciplines contained within an integrated PBL scenario, but their role in PBL is to help students to develop self-directed learning skills, rather than to act as a direct provider of information. Following a PBL session, students work individually to address the learning objectives for that session, and then feed back to the group at the next PBL session. The PBL topics complement the lectures and lab-based teaching and relate to the main theme or body system being studied at any one

point; they provide a clinical context for the science. PBL provides a mechanism for students to build their self-directed learning skills, to test their understanding of topics through facilitated discussion, and to integrate material from different disciplines.

In Year 3, and to a lesser extent in Years 4 and 5, we use CBL and TBL to focus, direct and enhance learning around specific clinical topics. Again, the purpose of small group teaching in this setting is to complement the lecture course and practical sessions and to let students apply their knowledge. CBL takes place in groups of 8-10 students, led by a clinical tutor. The focus is on a clinical case history, the format of which is identical to that used in clinical practice, and the investigations appropriate to that case. These include haematological and biochemical investigations, but also histology – accessed through a virtual microscopy programme “SLIDE PATH” – and radiological investigations accessed through an online radiology system identical to that used in the hospital – k-PACS. Students learn to interpret clinical problems in the clinical setting and to interpret results.

Labs: These are large group sessions, which may occur in a laboratory or dissection room. Laboratory sessions are focused on simple experiments, whilst the dissection sessions are conducted in the Laboratory of Human Anatomy.

Vocational and Professional Studies: In the Glasgow programme, students have early contact with patients. Clinical training and Communication

Skills start in Year 1, and continue throughout the programme. In Vocational Studies students are attached, in groups of 8-10 to a tutor (usually a GP) and participate in a series of activities including Communication Skills sessions and hospital visits. This aspect of the course also focuses on topics relating to ethics, professional standards and behaviour.

Clinical Skills: Clinical skills begin in Year 1 and continue through to the end of the programme. In the first two years, dedicated clinical skill sessions are conducted in the Wolfson Medical School Building, Clinical Skills Suite. Specific topics are covered in each year. When students move to serial clinical attachments in Phase 4 of the course, clinical skills are delivered in the hospital setting.

Video podcasts and other online resources are available to supplement clinical skills sessions. The focus in the early years is on clinical assessment, including normal clinical history and examination and clinical procedural skills; with the focus being on pathological findings and diagnosis in the later years of the course.

Academic Days: In Years 4 and 5, the clinical attachments include “academic days”. These involve lectures and small group teaching, the aim of which is to complement the teaching in clinical attachments.

Clinical Attachments (Years 3-5): From the middle of Year 3 onwards, students are in a series of rotating clinical attachments, which form Phase 4 of the curriculum. These include medicine, surgery, psychological medicine, child health, obstetrics and gynaecology, general practice, emergency medicine, musculo-skeletal medicine and surgery,

surgical specialties – ENT/ophthalmology, neurology/ cardiology. Each clinical attachment has a similar form. Students are attached to a specific hospital, where they are located a base ward. They are allocated an individual educational supervisor who supervises their programme and assessment. Each clinical attachment has a mini curriculum and learning objectives which are agreed in advance.

On-line organisation of timetabling and teaching (Moodle and VALE): Moodle is a web-based virtual learning and teaching management system on which, for example, lectures are posted, recorded lectures are made available and in which self-assessment tools, such as multiple choice questions (a Moodle “quiz”) are posted. There are feedback opportunities, and the ability to interact with tutors and fellow students (moodle2.gla.ac.uk). VALE is a timetabling system used by the Medical School to communicate with students regarding allocation to clinical attachments, tutors, and Vocational and Professional Studies. It is likely to be replaced over the next few years, as many of the roles for which it was previously used have been taken over by other systems.

e-Portfolio: All undergraduate medical students have an ePortfolio account. The undergraduate ePortfolio system mirrors the ePortfolio used in Postgraduate training, and has been developed in conjunction with other UK medical schools. In clinical years, students use the ePortfolio to receive assessment and feedback on their clinical placements. Through its use in undergraduate years, students develop a habit of recording their learning activities and assessments, and this electronic record continues with them into the Foundation Programme.

A Year by Year Guide to the Curriculum

Year 1, Phase 1

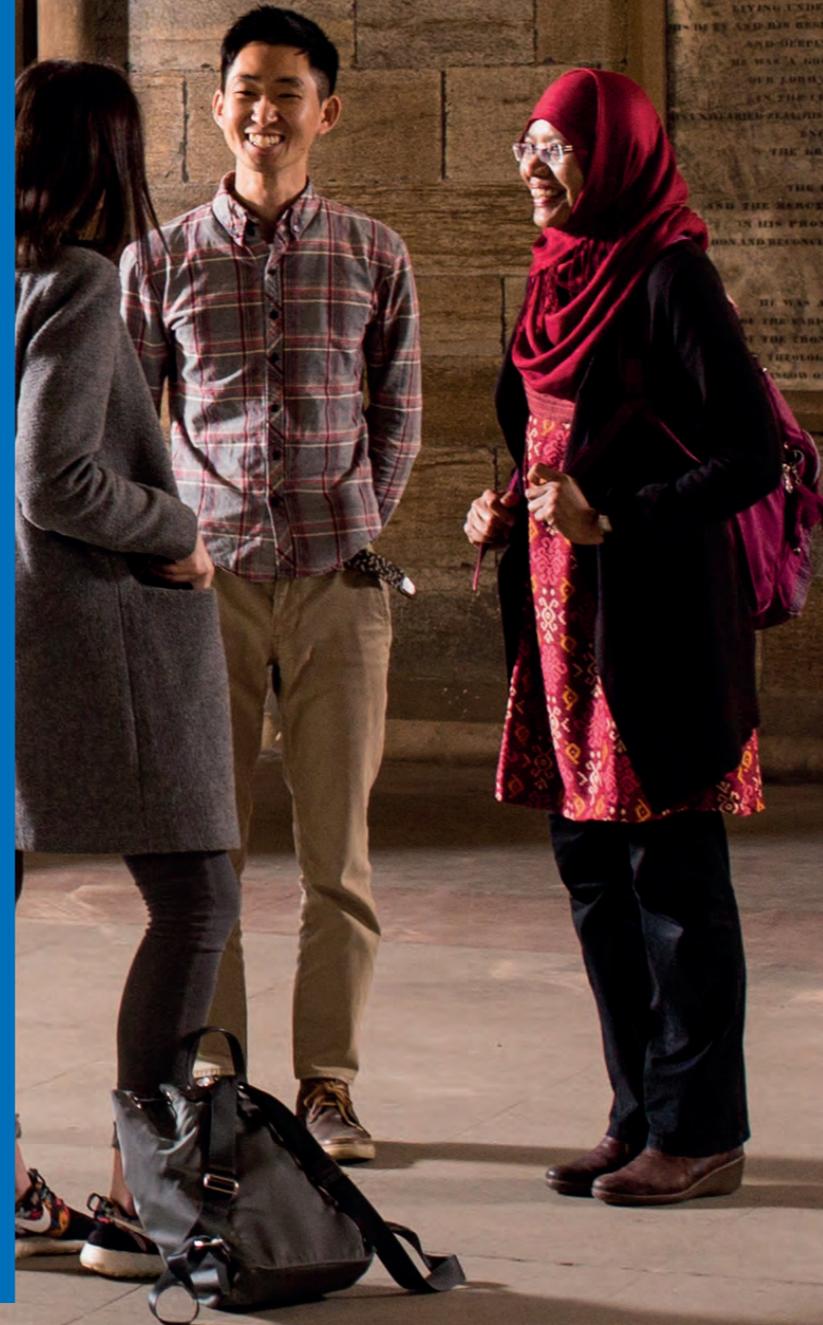
Aims: The aim of Phase 1 is to bring all students, regardless of their background and experience, to a similar level required for the rest of the programme. It is intended to be an introduction to human biology at a relatively basic level. The teaching is organised around an 'anatomy core', in which students take a 'broad-brush' look at the various systems of the body, with other biomedical teaching woven around this. In the first three weeks, students learn about basic organisation of tissues, and are introduced to cell biology, immunology, molecular biology, physiology and metabolic processes. From weeks 4-11, they follow the 'anatomy core', with an anatomy laboratory session each week, a Moodle-based workbook to complete in their own time and weekly interactive feedback sessions.

A PBL component runs throughout weeks 1-11 of Phase 1, with two one hour sessions per week; in weeks 12 and 13 the focus is mainly on revision and formative feedback. The structure of the curriculum is intended to support students' transition from the school environment to the self-directed learning environment of the Medical School. PBL objectives overlap with those from other components of the first Phase of the curriculum. All aspects are examinable.

Assessment: The assessment in Phase 1 comprises a formative examination, based on single best answer (SBA) questions, conducted at the end of the Phase. This is aimed to offer the student feedback on progress and an indication on level of understanding at an early stage. The material is also examined in a Summative examination (the MB ChB Written Exam) at the end of Year 1. Students must pass the summative exams to progress to Year 2.

Students also undertake the Medical Independent Learning Exam (MILE) at the end of Phase 1; a test of self-directed learning skills, such as identifying and critiquing resources. This is the first piece of summative assessment and must be passed for progression to Year 2. Finally, in Phase 1, students have a short formative coursework exercise, which helps them to become familiar with our electronic submission system. They also practise good academic writing, including citation and referencing.

Learning Outcomes: By the end of Phase 1 students should have a comprehensive knowledge of basic anatomy and physiology, of the major organ systems and their functional role. In addition, they will have a working knowledge of other basic biomedical sciences, basic communication skills and will have learned some clinical procedures, including CPR and injection techniques.



What is in a typical week?

The diagram below gives an example of a typical week. The timetabling of sessions may vary, and the class is randomly divided into three cohorts for practical classes. Thus, the individual timetable for an individual student may differ.

Time	Mon	Tues	Wed	Thurs	Fri
Morning	PBL			PBL	Lecture
		Lecture	Lab		Feedback Session
Afternoon	Lecture	VS	Lecture	Lecture	

Year One, Phase 2; Year Two, Phase 2

Aims: The aim of Phase 2 is to develop an in depth understanding of anatomy, physiology, biochemistry, pharmacology and other basic biomedical sciences. The level of knowledge will build on that gained during Phase 1. In addition, students continue to follow a programme of Clinical Skills, Vocational and Professional Studies and Communication Skills. Phase 2 follows a sequence of body systems – cardiovascular, respiratory etc – in a series of “blocks”. As in Phase 1, the programme follows the anatomy core – reflecting the dissection sequence. Within each block there are a series of lectures, and laboratory practicals, that cover the anatomy, physiology, pharmacology and other basic biomedical sciences relevant to that individual system. As the course progresses, students will develop an integrated understanding of normal bodily function, as well as an appreciation of pre-clinical scientific disciplines such as physiology and anatomy. As in Phase 1, PBL (and lab) sessions based around clinical scenarios and pathological conditions are used to highlight medical relevance.

PBL continues in Phase 2, normally meeting twice a week for one hour each with the exception of Head, Neck and Neurological Systems block which have sessions of two hours each. This is to reflect the two streams covered in the block. The lectures and practicals are delivered primarily by staff in the Schools of Medicine and Life Sciences, but with contributions from clinical academics and NHS clinicians.

Students have regular sessions in Vocational and Professional Studies, Communication and Clinical Skills. These include hospital visits and basic clinical examination, simple procedures and basic history taking. The details of each of these are highlighted later in this document.

Student Selected Components (SSC): In Year 2 the students take their first Student Selected Component. This is a five week block where students may focus on one aspect of pre-clinical or clinical science that interests them. A wide selection of SSCs are offered by staff in the Medical School, College of MVLS and the NHS.

Assessment: There are a variety of assessments through Phase 2. At the end of some of the individual blocks there is summative coursework to be completed and submitted and some also have formative assessments. The formal summative written (or degree) examinations are at the end of academic Year 1 and Year 2, with an additional examination at the end of semester 1 in Year 2.

In Year 1 there is a written examination which examines all the components of Phase 1, together with components of Phase 2 delivered in Year 1. This is a summative examination (MB ChB1), which must be passed to progress to Year 2 (as must the MILE exam and the summative coursework). The summative coursework in Year 1 includes a Life History Project where students longitudinally follow a patient. There is also a Community Diagnosis Project where as a team students investigate a topical health issue within their allocated community.

In Year 2, coursework includes the Family Project (completed over two semesters) and an exercise in critical analysis in semester 1. There is a summative SBA examination in December which covers all the material that students have covered to that date, with a focus on the material delivered in Year 2. At the end of Year 2, there is a further summative examination, which covers all the material which students have studied to date, again with a focus on material delivered in Year 2. This includes the anatomy, physiology, pharmacology and basic biomedical sciences, together with aspects of Clinical Skills and Vocational and Professional Studies. It is a written examination involving modified essay questions and SBAs and must be passed for students to progress to Year 3 of the course. In addition, for progression to Year 3, students must pass the objective structured clinical examination (OSCE) and the summative coursework in Year 2.

Learning outcomes: By the time students reach the end of Phase 2, they will have detailed knowledge of the human anatomy and physiology of the major human organ systems; a knowledge of basic pharmacology and pharmacology applied to human physiological systems; and an in-depth knowledge of basic biochemical sciences, including immunology, molecular biology, cell biology and biochemistry. The understanding of normal function will have been developed together with examples of dysregulation – e.g. the development and consequences of dyslipidaemia, the development and consequences of diabetes, the development and physiological responses to shock.

Reading material: This is included for guidance, and to give an indication of the standard expected in Years 1 and 2. It is not prescriptive, and other books may be equally suitable. All students have access to a range of clinical textbooks and journals to which the University subscribes, in print and electronically.

Basic Immunology - Abbas & Lichtman
Essential Cell Biology - Alberts
Ganong's Review of Medical Physiology - Barrett
Medical Biochemistry - Baynes & Dominiczak
Donaldson's Essential Public Health - Donaldson
MacLeod's Clinical Examination - Douglas
Healthy Respect - Downie
Integrated Anatomy - Heylings
Communication Skills for Medicine - Lloyd
Clinically Oriented Anatomy - Moore et al
Basic Medical Sciences - Naish
Human Physiology: the basis of medicine - Pocock & Richards
Langman's Medical Embryology - Sadler
Human Histology - Stevens & Lowe
Vander's Human Physiology - Widmaier

What is in a typical week?

The diagrams below gives an example of a typical week. The timetabling of sessions may vary, and the class is divided into three cohorts for practical classes.

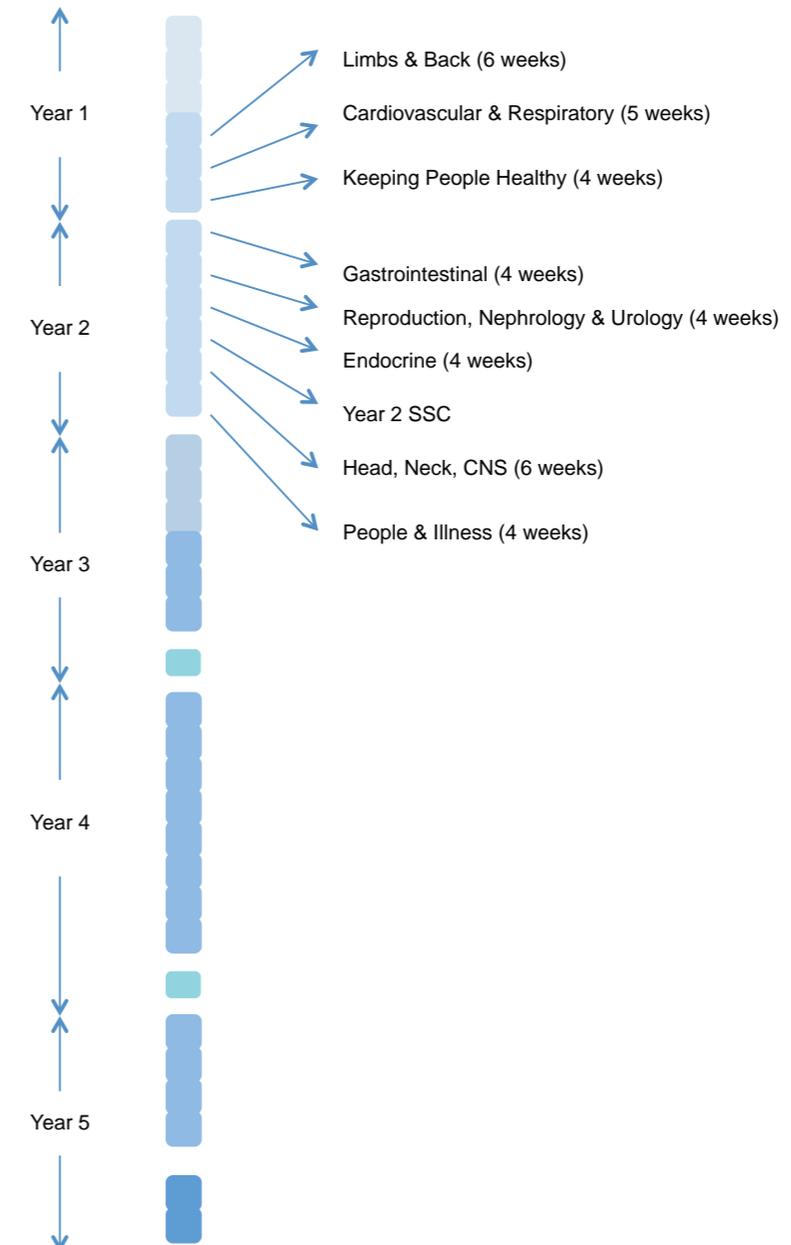
Year 1, Phase 2

Time	Mon	Tues	Wed	Thurs	Fri
Morning	PBL	Lecture		PBL	Lecture
	Lecture		Lecture		LAB
Afternoon	Lecture	VS		Lecture	

Year 2, Phase 2

Time	Mon	Tues	Wed	Thurs	Fri
Morning		PBL		LAB	PBL
	Lecture		VS	Lecture	
Afternoon	Lecture				Lecture
	Lecture		Lecture	LAB	

Phase 2 - Systems-based Biomedical Sciences



Year 3, Phase 3

Aims: The aim of Phase 3 is to develop student's knowledge of medical biology, including anatomy, physiology, pharmacology and biochemistry and introduce a detailed understanding of pathophysiology, by focusing on clinical sciences. Generic and organ based system focussed teaching of pathology, histopathology, microbiology, clinical pharmacology and clinical biochemistry provide an intense course giving students a high level of pathophysiological knowledge, on which the study of clinical medicine, and all its subspecialties, is based.

Phase 3 follows a series of week-long blocks, building on the students' understanding of the clinical sciences including medical genetics, pathology and microbiology before focussing on pathophysiological study of clinical systems. Teaching comprises a series of lectures, delivered by specialists in the week's topic including clinical academics and NHS clinicians supported by

CBL - tutorials that focus on clinical cases and illustrating key learning points.

The aim of CBL is to develop the approach that clinicians use to solve problems, and also to apply and develop knowledge that students have gained in the specialty areas. Clinico-Pathological Conferences, where a team of clinical scientists, pathologists, microbiologists and clinical biochemists present various aspects of a case, at the end of each week illustrate and develop pathophysiological understanding of human disease.

In addition, students continue to have a session of clinical skills and a day per week attached to a hospital or to general practice. These clinical attachments follow a short prescriptive course in history taking and clinical examination in preparation for the more intensive training on clinical placement in Phase 4. Whilst all students

will have had basic training in history taking and clinical examination in the first two years, this is the first substantial opportunity to practice these skills on patients in clinical settings.

This 15 week clinical Phase has its own clinical history and examination handbook, including examinable material.

Learning outcomes: At the end of Phase 3, students should have an in depth knowledge of human pathology including immunology, infection and genetics together with a working knowledge of clinical pharmacology and clinical biochemistry appropriate to the clinical systems. This knowledge of will be applied to clinical learning in the subsequent ward-based attachments.

Assessment: In Year 3 there is a summative written exam (MB ChB3 written) in February and a clinical exam (OSCE3) in June. For Year 3 summative coursework, students submit a longitudinal portfolio, based on an extended attachment to a general practice. Students must pass the written, clinical and coursework components to progress to Year 4.

Reading material: Students in Phase 3 will be expected to consult general medical, pathology, microbiology and pharmacology textbooks for each week of the course. Additional specialist texts may be helpful. While not prescriptive the following is a list of suitable texts:

Essential Cell Biology - Alberts
Medical Biochemistry - Baynes & Dominiczak
Mims' Medical Microbiology - Goering
Principles of Pharmacology - Golan
Essential Haematology - Hoffbrand
Clinical Medicine - Kumar & Clark
Muir's Textbook of Pathology - Levison
Lecture Notes on Clinical Pharmacology - McKay & Walters
Davidson's Principles & Practice of Medicine - Ralston et al
Essential Medical Genetics - Tobias
Notes on Medical Microbiology - Ward
Brody's Human Pharmacology - Wecker

#2 for
Medicine
in UK*

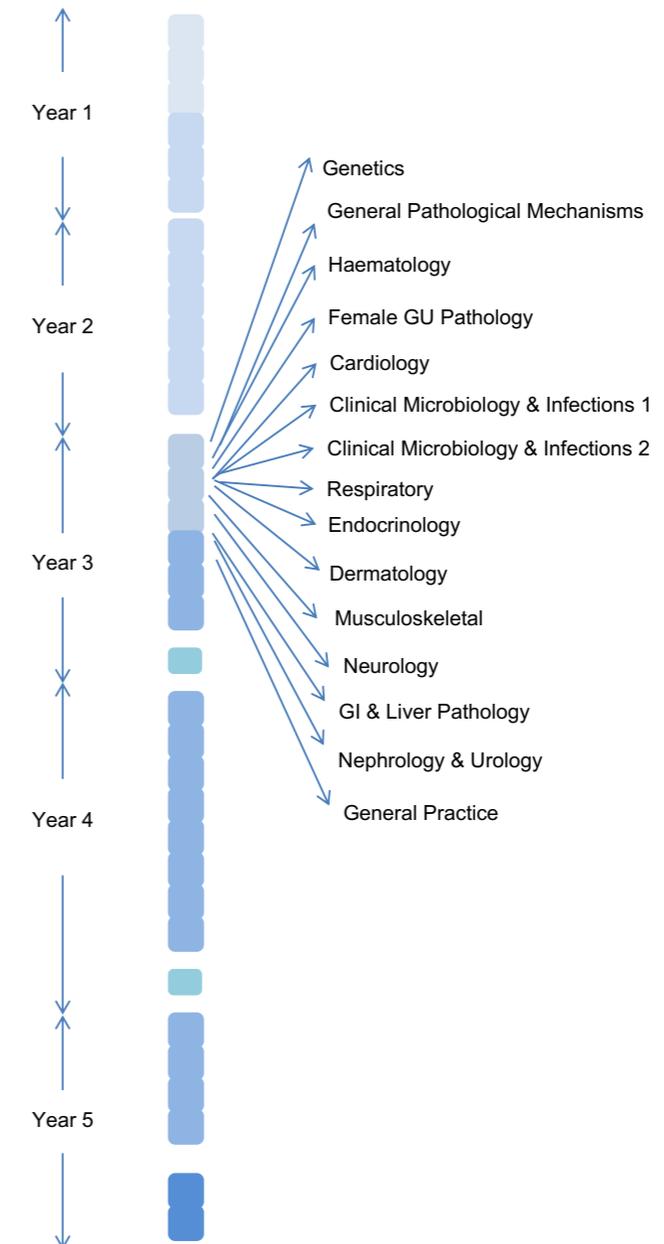
*The Times Good
University Guide
2018

What is in a typical week?

The diagram below gives an example of a typical week. Since students are divided into groups, half of whom have clinical teaching on a Tuesday and the other half on a Thursday, the precise timing of sessions may vary.

Time	Mon	Tues	Wed	Thurs	Fri
Morning	Lecture	Hospital or GP	Comm/ Clinical Skills	Hospital or GP	Lecture
	Lecture				Lecture
Afternoon	CBL tutorial	Hospital or GP	CBL tutorial	Hospital or GP	Feedback Session
	Lecture/CPC				

Phase 3 - Clinical Sciences



Year 3-5, Phase 4

Aims: Following completion of Phase 3, students enter a two year sequence of rotating clinical attachments that continues until the final examination in February of Year 5. In Year 3, students undertake three 5 week blocks, in clinical medicine, clinical surgery (including orthopaedics) and a Student Selected Component (SSC2). In these early clinical attachments, students will develop their expertise in history taking and clinical examination and meet a range of common clinical conditions. For example, at the end of the blocks in clinical medicine and surgery, students will be expected to have seen patients with the following: stroke, ischaemic heart disease, heart failure, pneumonia, asthma, gastroenteritis, an acute abdomen, gastrointestinal malignancy, jaundice, peripheral vascular disease, prostate disease, urinary tract infection, and a variety of fractures. It is expected that all students should cover a core of basic topics during these early clinical attachments but experience will vary depending on the focus of the clinical placements.

As the course develops through Years 4 and 5, students progress through a series of 5 & 10 week clinical attachments. These involve clinical specialties, general practice and increasing depth and complexity of clinical problems. Phase 4 is illustrated on p27, which shows one possible sequence of attachments. Each attachment has a mini-curriculum and learning objectives. During their clinical attachments students have a clinical supervisor, whose role it is to provide a timetable, and to organise and deliver assessments based

on case histories, observed clinical history taking or examination, and a mock OSCE assessment. Although the sequence of attachments differs for individual students, the clinical attachments complement one another, adding to overall experience and expertise.

Throughout Phase 4 there is a lecture programme, delivered in Academic Days, covering all the clinical specialties. Although the sequence does not mesh with individual clinical attachments, the lecture course complements clinical experience, and provides material examinable in the 4th and Final MB ChB examinations.

Student Selected Components: Students undertake a five week Student Selected Component in Years 2, 3 and 4 of the course. SSCs in Year 2 mostly originate from academic and honorary academic staff and are offered to students in a 'menu' form. From Year 3 onwards, students are encouraged to propose their own SSCs. These can be undertaken in Glasgow or elsewhere. In Year 4 an SSC can also run from an elective and these can be in an overseas laboratory, hospital or other appropriate location.

World class
clinical teaching
facilities at Glasgow
Royal Infirmary &
Queen Elizabeth
University Hospital

Electives: Medical students are required to complete two periods of elective study as part of their undergraduate course, during the vacation periods at the end of the third and fourth years, called the junior and senior electives respectively. Each elective lasts at least 4 weeks. The aim of the elective programme is to provide students with high quality experiences involving personal, professional and clinical challenge, which are relevant to their developing experience and competence as future doctors. Electives have a different focus, therefore, from Student Selected Components, which provide students with the opportunity to study selected topics in depth. Students are encouraged to base their junior elective in the UK, in settings where they can focus on the consolidation of their developing clinical skills. For senior electives, the topic may be any area of professional activity that can be justified in terms of future career interest. Many senior electives are taken overseas, which often requires planning over a year in advance.

Assessment: The assessment of Year 3, Phase 4, takes place in the OSCE examination in June. In addition, at the end of each clinical attachment and SSC, the student's progress is reviewed by their Supervisor. Students must pass each clinical attachment and SSC. In Year 4, there are similar reviews at the end of each block. In February of Year 4 there is a summative written examination (MB ChB4 Written).

The Final examinations takes place in the February of Year 5, and comprise a written examination (MB ChB5 Written) and wide ranging OSCE examination (OSCE5). Both of these must be passed individually to progress to graduation.

Learning outcomes: At the end of Phase 4, students will have achieved a level of knowledge and expertise to permit provisional registration with the GMC, to progress to postgraduate training and to work as a Foundation Year doctor in a supervised setting.

Reading material: This is included for guidance and to give an indication of the standard expected in Phase 4. It is not prescriptive and other books may be equally suitable. All students have access to a range of clinical textbooks and journals to which the University subscribes, in print and electronically.

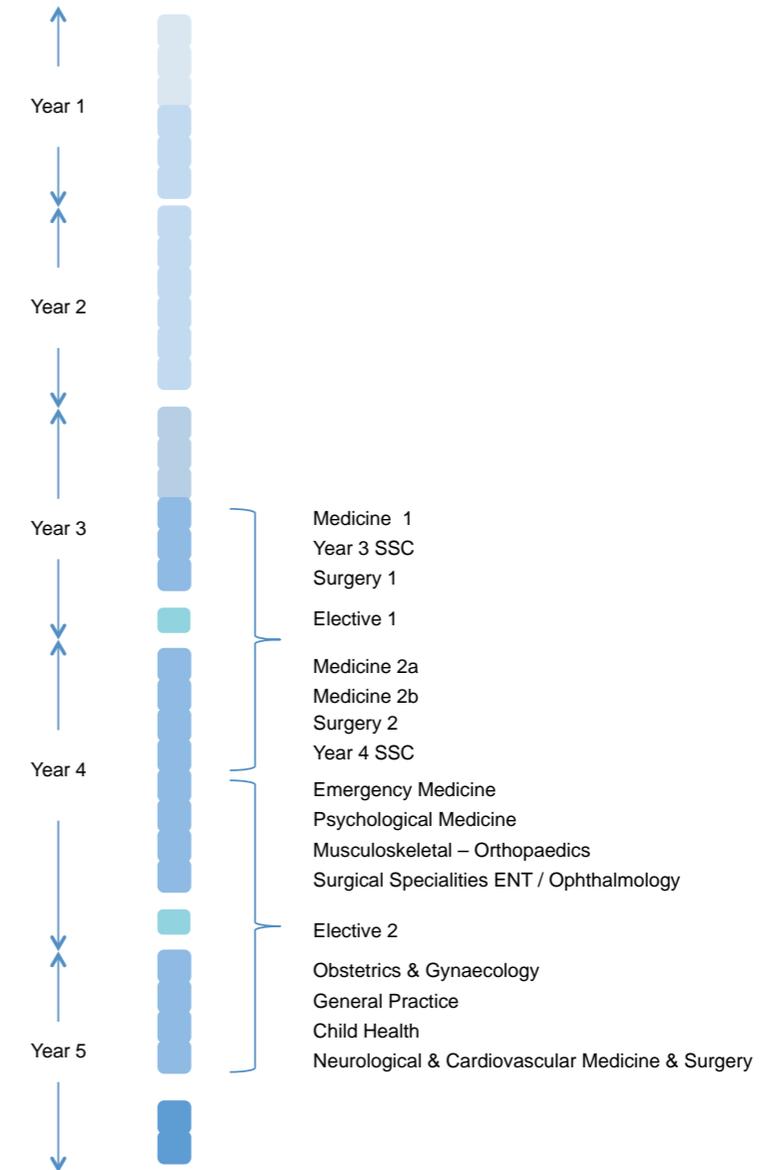
Gynaecology Illustrated - Bain et al
Illustrated Clinical Method: A General Practice Approach - Fraser
Principles of Pharmacology - Golan
Lecture Notes: Obstetrics and Gynaecology - Hamilton-Fairley
Obstetrics Illustrated - Hanretty
ABC of Eyes: Injury to the Eye - Khaw et al
Clinical Medicine - Kumar & Clark
Textbook of Paediatrics - Lissauer et al
Clinical Obstetrics & Gynaecology - Magowan & Owen
Clinical Pharmacology - McKay & Walters
Davidson's Principles & Practice of Medicine - Ralston et al
Lecture Notes on Clinical Pharmacology - Reid et al
Oxford Handbook of General Practice - Stephenson
Lecture Notes: General Surgery - Watson et al
Brody's Human Pharmacology - Wecker
Core Psychiatry - Wright et al

What is in a typical week?

In Phase 4, there is wide variability in attachments, reflecting the nature of medicine and the programme. A "typical" timetable for a clinical attachment is shown below.

Time	Mon	Tues	Wed	Thurs	Fri
Morning	Bedside Teaching	Ward Round	Bedside Teaching		Bedside Teaching
Evening/Afternoon	Out-patient Clinic	Unit Meeting	Tutorial	Specialty Teaching Medical Receiving	Assess

Phase 4 - Clinical Practice



Each student will follow a different sequence of attachments within each of the two brackets.

Phase 4 teaching predominately takes place in and around the clinical environment, and is the transition from learning the theory of medicine to its practice. For every student this should be a time when you grow to become part of the clinical team, learning to play your part in all aspects of medical practice around the major medical and surgical specialities.

Preparation for Practice

PfP is the final component of the course. It is essentially an apprenticeship, where students are attached to a hospital ward to “shadow” the Foundation Year doctor whose role they will take over when they start work. Ideally the attachment is in the same hospital in which they will work in the Foundation Training Programme. The clinical attachment in PfP is complemented by a lecture programme which covers practical and medico-legal issues relating to working as a clinician. Although this part of the course is less structured, it is an essential part of the programme which must be completed prior to graduation. It is also flexible, and allows students who do not sit, or pass, the Final MB examination at the first attempt to re-sit in time to enter postgraduate training at the same time as their peers. The assessment of PfP is based on clinical assessments and submission of a completed clinical portfolio.

Graduation & Postgraduate Training

The undergraduate MB ChB programme is closely linked to postgraduate training, with an overlapping curriculum and shared aspects of assessment. Graduates entering the postgraduate training system in the UK start work in a two year Foundation Training Programme. For the first year, Foundation Year 1 (FY1), trainees are granted Provisional Registration with the GMC and, upon satisfactory completion of the year, Full Registration. FY1 and FY2 posts are linked and follow the Foundation Curriculum. Further details of postgraduate training can be found at: www.foundationprogramme.nhs.uk.

Assessment

The MB ChB programme has regular assessments; Formative assessments provide feedback on progress and Summative assessments, which must be passed to allow progression to the next year of the course, and, ultimately, to graduate.

The outline timetable of summative assessments is shown on p31. There are Summative examinations (the Professional MB examinations) in each of the academic years. In addition to written examinations, which include multiple choice, short answer and modified essay questions, there are practical examinations (Objective Structured Clinical

Examinations or OSCEs) in the 2nd, 3rd and 5th year examinations. There are also summative coursework assignments in Years 1, 2 and 3 – the MILE, SSCs and elective reports, all of which count towards progression.

Professionalism

Professionalism is a fundamental part of training and practice. Medical students are encouraged and supported in learning and developing the professional attitudes and behaviours that underpin safe and effective medical practice.

On commencing MB ChB, students sign the University of Glasgow’s MB ChB Student Agreement, which sets out some of the core professional values and behaviour important both for undergraduate careers and future professional practice. Professional development is integral to all activities in the MB ChB and will underpin a student’s personal development, learning and teaching as well as relationships with patients, staff and fellow students.

Professional development covers a broad spectrum from attending sessions and managing absence through to working in a multi-professional team and being involved in the delivery of patient care. The MB ChB curriculum will facilitate personal and professional development and offer

help and advice where needed. Students are encouraged to seek support at any point during their undergraduate career.

Distinction, Honours & Commendation

In the Professional examinations, marks are graded and approximately 10% of students are awarded a pass with Distinction. On successful completion of the programme, the degrees of Bachelor of Medicine and Surgery (MB ChB) are awarded. The degrees are awarded with Honours or Commendation to the top 10%-15% of the class on the basis of written and OSCE exam results during the programme, using a cumulative average mark that is weighted towards the examinations at the end of the programme.

Prizes, Medals & Vivas

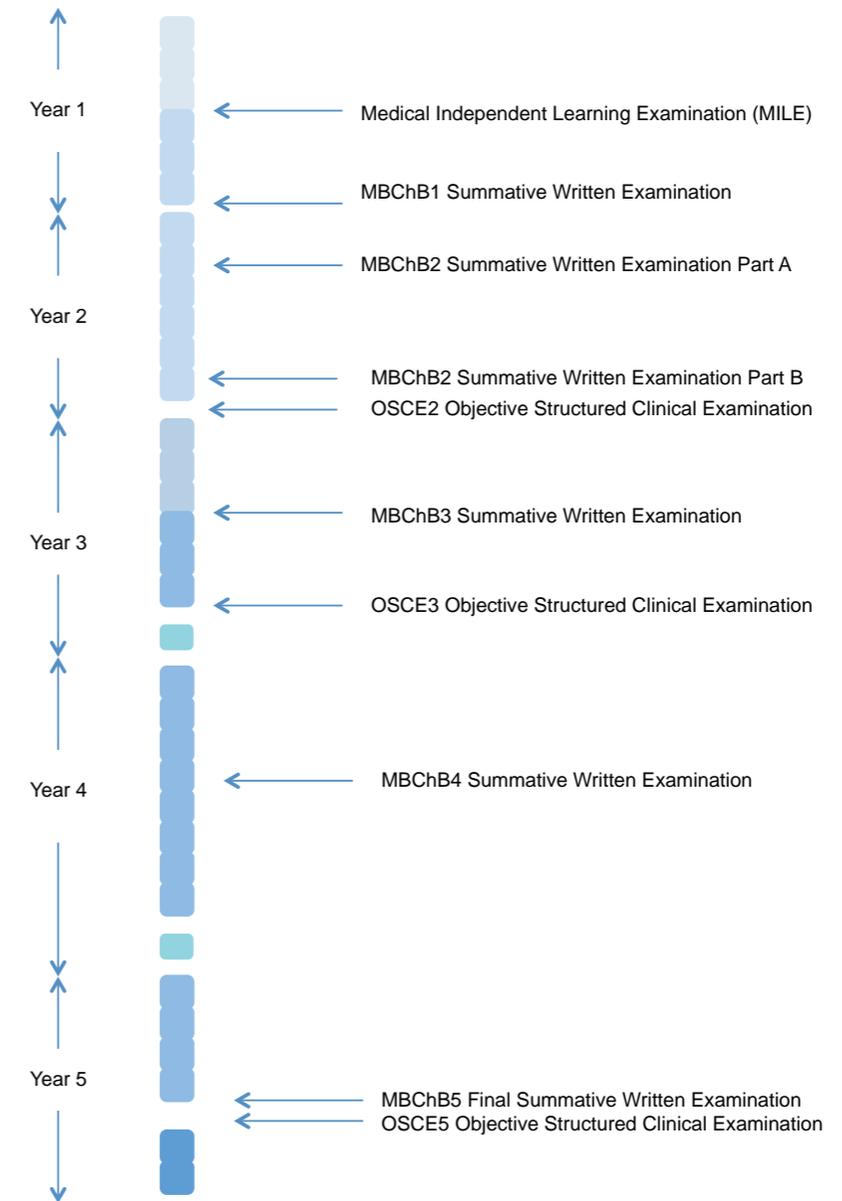
The University of Glasgow holds over 90 prizes, medals and bursaries for undergraduate medical students. These are a way of rewarding excellence and are in recognition of the long history of medicine at Glasgow. Notable awards are the Brunton Memorial Prize & Fullerton Prize for the most distinguished graduate and the Marion Gilchrist Prize for the most distinguished woman graduate. The Medical School has also re-introduced prize vivas, to which students who have demonstrated excellence in professional examinations are invited.



'The University of Glasgow really prepared me for becoming a junior doctor'

Dr Krithivasan P Raman
Most Distinguished Graduate
(joint winner, 2017)

Summative Assessments (excluding coursework)



E-Learning

The Medical School uses Moodle as its web based e-learning system (a Virtual Learning Environment – VLE). The system brings together different forms of e-learning and includes quizzes and chat rooms, which can take the form of virtual tutorials. Moodle also includes the facility to upload files so that students can submit coursework electronically. Access to the VLE is secure and only accessible to registered students and staff; registration permits students access to their course material from anywhere in the world.

The Medical School embraces innovative approaches to teaching. For example, academic staff in Clinical Skills have developed podcasts covering essential undergraduate practical skills. These podcasts, which are highly rated worldwide, are available to download from the University's iTunesU site glasgow.ac.uk/about/itunesu

Some lectures are recorded for students to view online. Students can see, hear and experience the lecture (for their personal use) as if they were in the class. Lectures can be viewed on-demand, on a computer or mobile device with a web browser, via the University's secure VLE.

The Medical School uses a classroom responses system to engage students in the lectures, and to provide feedback. The School also use Peerwise (a system of student generated questions) to consolidate learning and assist revision in Phase 1-3 of the curriculum.

The E-learning Officer in the Medical School actively engages with academic staff, NHS staff and students to produce e-learning resources and works closely with MVLS College IT services to enhance the medical curriculum through innovative teaching resources. The School subscribes to Anatomy TV and BMJ Best Practice; all students have access to many e-book versions of core medical texts and to medical journals that can be accessed off campus via the library catalogue system. The Medical School is committed to integrating technology-enhanced learning into the medical curriculum.

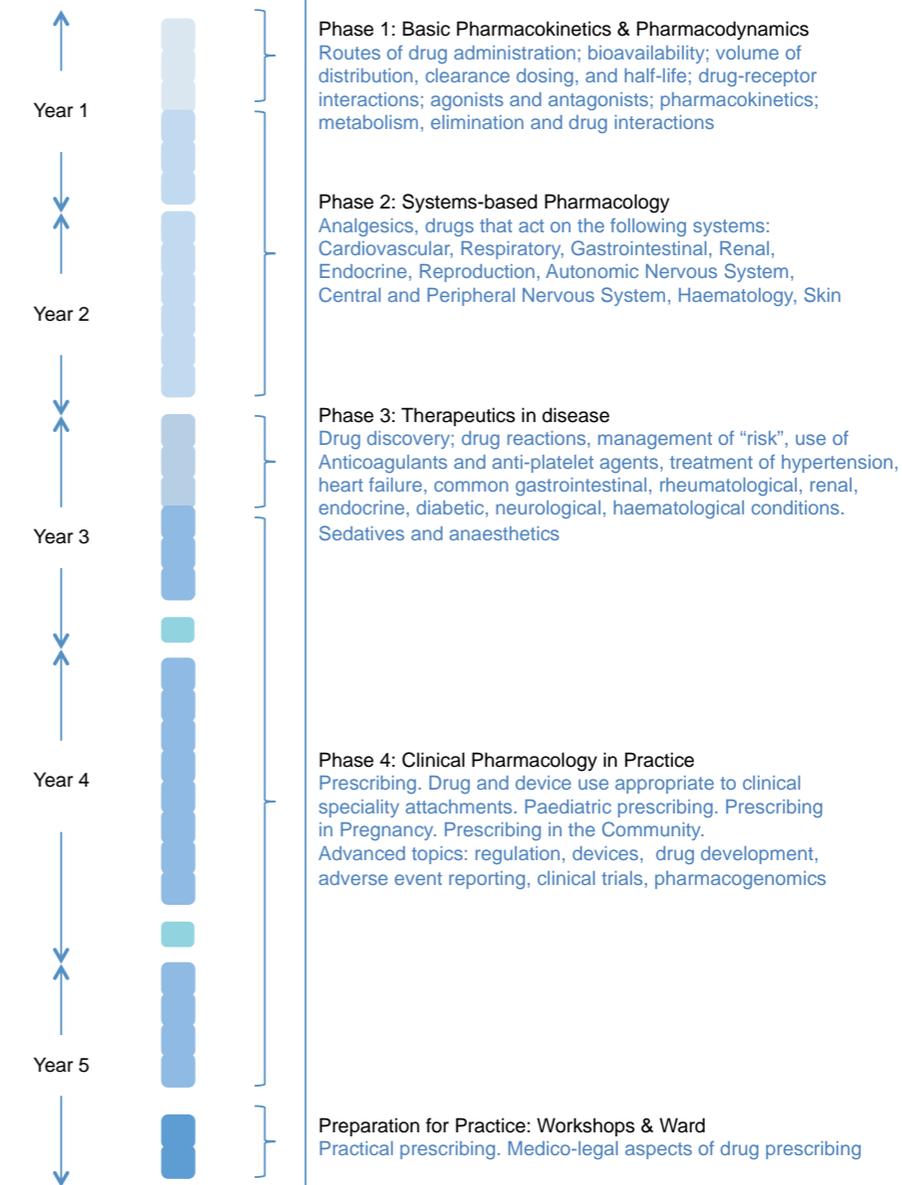
24/7 access
to the Wolfson
Medical School
and Teaching and
Learning Centre
Libraries

How do the Vertical Themes fit in to the MB ChB programme?

The purpose of the vertical themes is to provide additional structure to the course, particularly in areas highlighted by the GMC. We have 7 themes: Clinical Skills; Vocational & Professional Studies (including Communication Skills); Health of Populations and Communities (Public Health); Pharmacology; Clinical Pharmacology and Prescribing (PPP); Anatomy and Imaging (A&I); and Basic Biomedical Sciences (biochemistry, immunology, cell biology, microbiology, molecular biology, physiology).

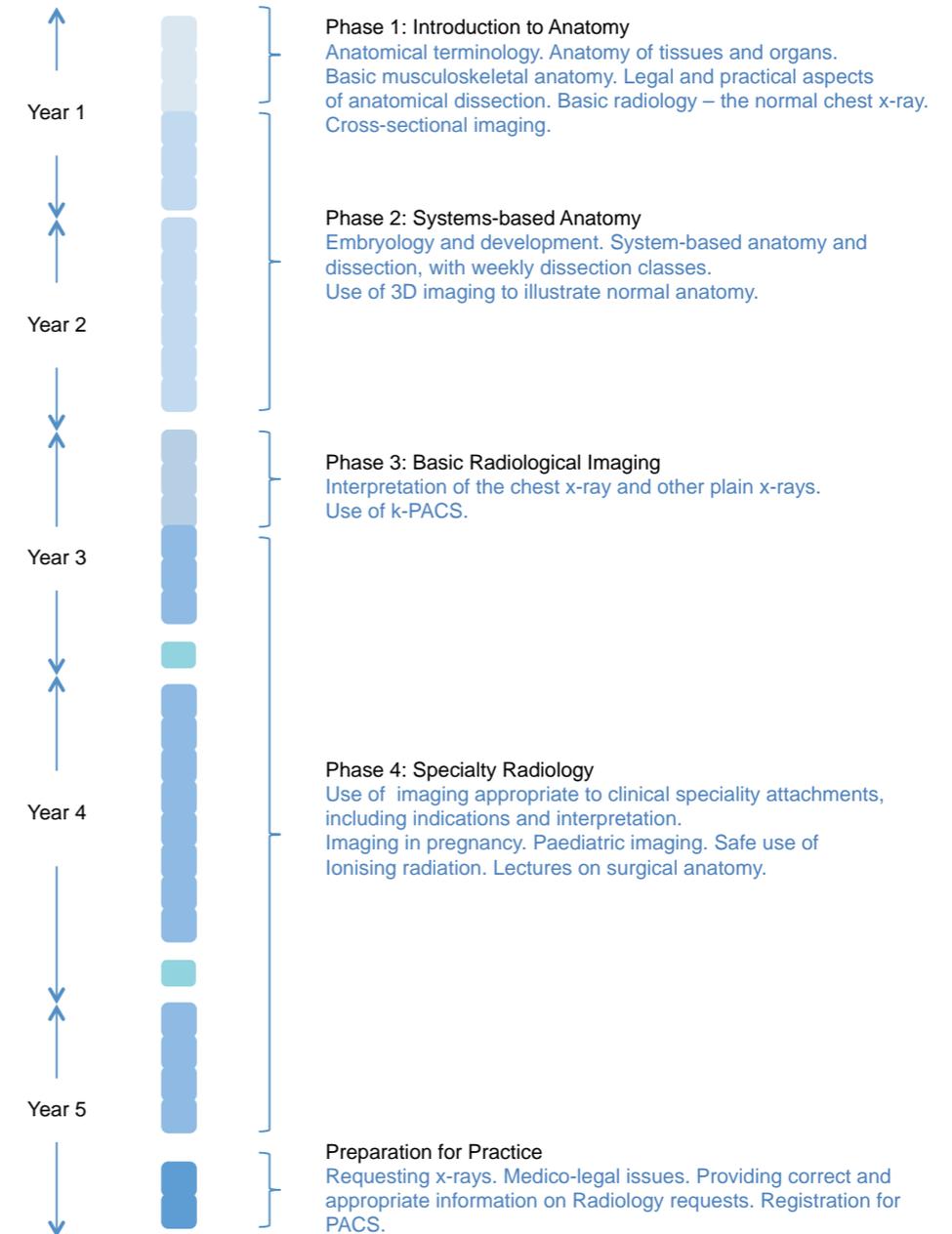
The figures on pages 35 and 37 illustrate the vertical themes in PPP and A&I, showing the components covered at different stages in the programme. In the larger course manual and curriculum map, available to undergraduate students, the curriculum is mapped against vertical themes and also against many specialist curricula that are provided by Specialist Societies – such as the Physiological Society – and by the Royal Colleges – for example, of Radiology and Pathology.

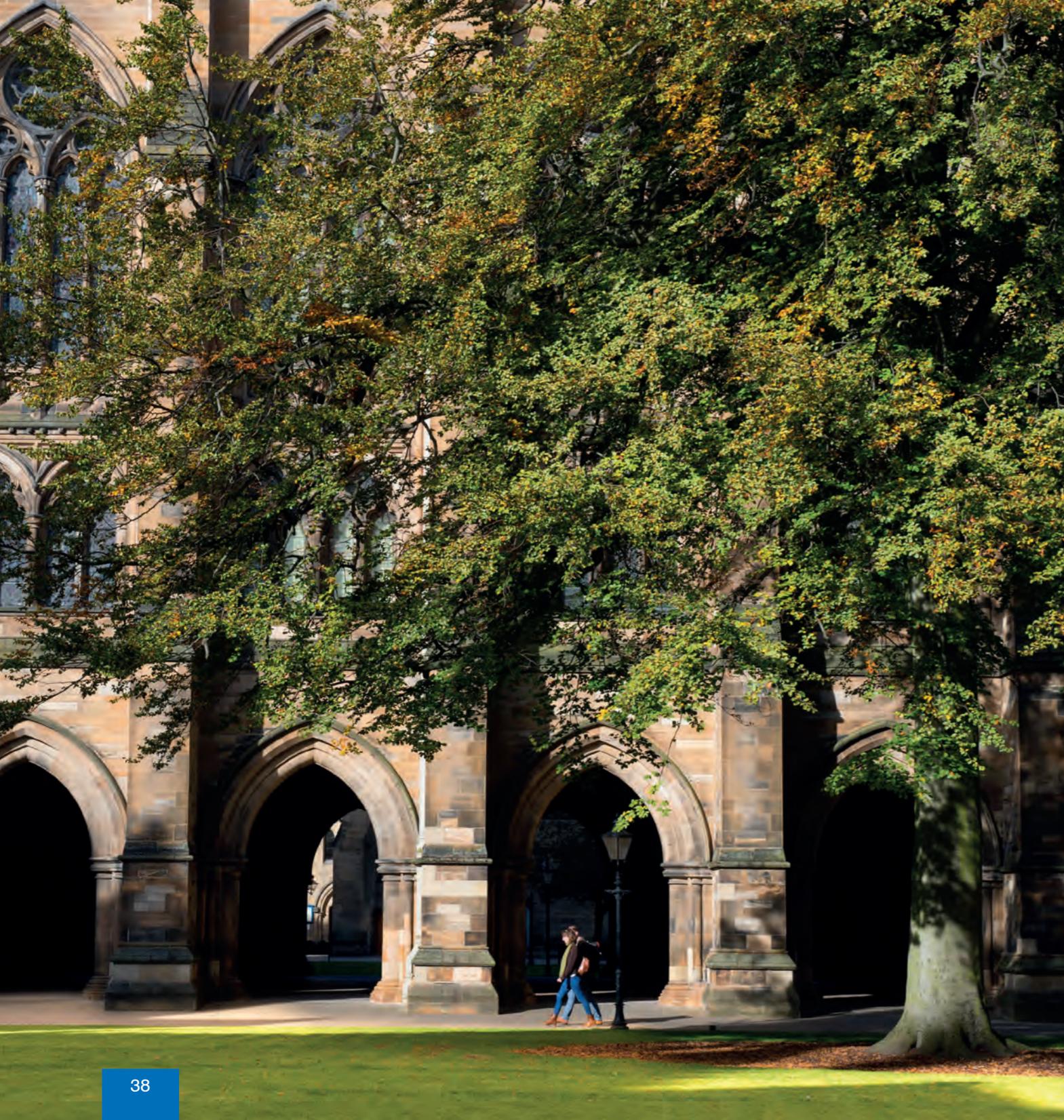
Vertical Theme 1: Pharmacology, Clinical Pharmacology & Therapeutics



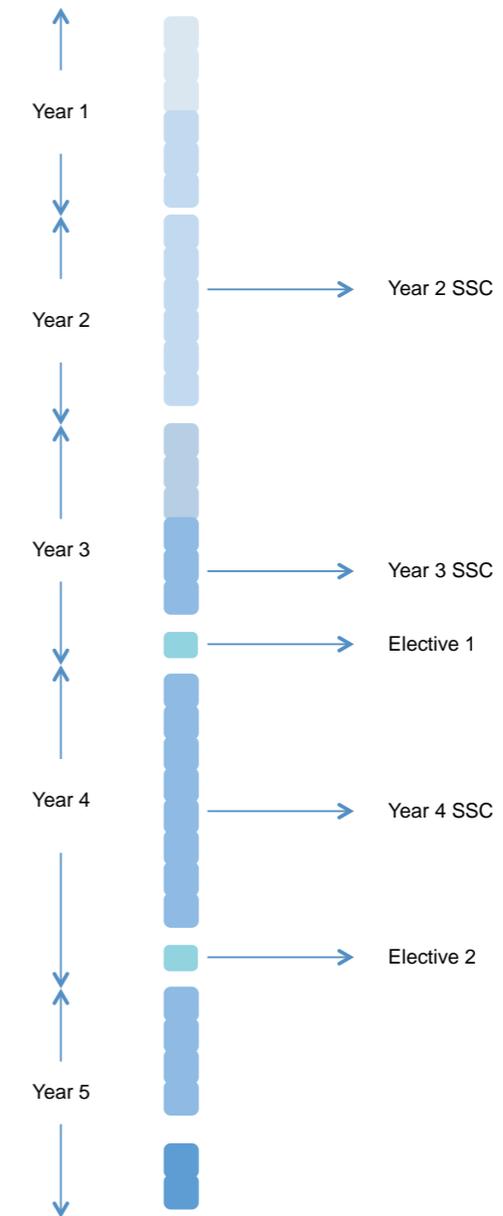


Vertical Theme 2: Anatomy & Imaging





Student Selected Components & Electives



Intercalated BSc Programme

Aims: The intercalated BSc programme provides students with an opportunity to study a scientific discipline in depth. The programme is ideal for students wishing to consider a research or academic career, and for those who want to broaden their experience and education. The intercalated degree broadens career options for postgraduates. We offer one and two year intercalated degree programmes in the School of Medicine, School of Life Sciences and School of Critical Studies. The standard is comparable to the BSc (Hons) degree in Life Sciences and has the same honours classifications. **The subjects offered are:**

School of Medicine – BSc (Med Sci) Clinical Medicine: This programme includes a student selected specialist course and project, chosen from the following areas: Cancer Studies;

Cardiovascular Studies; Clinical Neuroscience; Critical Care & Perioperative Medicine; Global Health; Immunity in Health and Disease; Industrial Placement (GSK); Mechanisms of Disease; Psychological Medicine; Public Health; Sports and Exercise Medicine; Women's and Children's Health.

All degree programmes have a Core Course, Statistics Course, Specialist Course and Research Project. The Core Course comprises lectures, tutorials and small group teaching in scientific and research methods. The statistics course is designed to equip students with a solid foundation in the necessary statistical approaches in order to aid understanding of the scientific and medical literature, as well as to allow appropriate and accurate analysis of students' own research projects.

Each specialist course includes lectures and small group sessions in the selected area. The Research Project is designed around the skills needed to conduct, present and publish basic and clinical research. The project is delivered by the scientific and clinical research staff within the College of MVLS.

Assessments include formative examinations in the first semester, written final examinations covering the core, statistics and specialist courses, and assessment of the research project including a presentation, research abstract and project write-up.

School of Life Sciences – BSc (Med Sci – 1 year) and BSc (Hons – 2 year):

The BSc (MedSci) is offered in: Anatomical Sciences; Biochemistry; Genetics; Microbiology; Molecular & Cellular Biology; Parasitology; Pharmacology; Physiology. The structure of these programmes includes modules from the BSc (Hons) courses. Each is different, as is the assessment.

School of Critical Studies – BSc (Med Sci) Honours in Medical Humanities:

The medical humanities is an interdisciplinary field that uses the methods of the arts and social sciences to contextualise, complement, and critique the biomedical understanding of human nature, health and well-being, and associated health-care practices. The intercalated programme is an opportunity for MB ChB students to develop their medical and professional expertise through a sustained encounter with the understanding of medical and health related topics developed within the traditions of the arts and social sciences.

More details of all BSc programmes can be found online at glasgow.ac.uk/schools/medicine/undergraduate/intercalateddegrees





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