

Medical Program Outline

Basic Science Courses

The following descriptions are overviews of the Basic Science courses. The subject matter and course objectives will continually change to reflect advances and new directions within the discipline, as well as growth and new dimensions within the faculty and academic community of the School.

BASIC PRINCIPLES OF MEDICINE

BPM 500 (17 credits)

Basic Principles of Medicine I (BPM1)

The course Basic Principles of Medicine 1 (BPM1) is a 17-credit course taught over 17 weeks in Term 1 of the Doctor of Medicine (MD) program of St George's University School of Medicine, Grenada, and within the St. George's University of Grenada School of Medicine/Northumbria University Program (SGUSOM/NU), in collaboration with Northumbria University, Newcastle upon Tyne, UK. It is part one of an organ system-based curriculum for the first academic year of the Basic Sciences program and is taught in three consecutive modules:

Foundation to Medicine: 6 weeks

Musculoskeletal System: 4 weeks

Cardiovascular, Pulmonary and Renal Systems: 7 weeks

Total: 17 weeks

Foundations to Medicine

In this first module, students will learn about the biological molecules associated with cells, tissues and organs from biochemical and cellular discussions towards a molecular understanding of human disease and pathology. Students will learn about normal and abnormal physiological states including homeostasis and how it is controlled via biochemical and genetic means. Cellular control of proliferation, senescence, apoptosis and necrosis will be explored. Histological, biochemical, physiological, and genetic aspects of cancer will be synthesized to develop a comprehensive analysis of the principles of this disease state. Students will increase their knowledge of human patterns of genetic inheritance beyond Mendelian concepts with the objective of seeing patients through a genetic lens. Genetic and genomic tests for diagnosis and characterization will be taught so that students will have a broad understanding of the advantages and limitations of these technologies. An overarching theme of this module is to introduce students to the language embedded in pathology tests and to provide an understanding and interpretation of the results. To this end, biochemical, physiological and genetic aspects of pharmacology will also be introduced.

Musculoskeletal System

The Musculoskeletal System module is an interdisciplinary study of the anatomical, histological, physiological and pharmacological principles of this organ system. The overall goal of this module is to provide a comprehensive knowledge base for understanding the normal gross anatomical and microscopic structures as well as the development and functioning of the musculoskeletal system. Case studies, practical laboratory sessions and small group discussions are an integral component throughout the entire module. The module also exposes students to cadaveric prosections and ultrasound simulation sessions with standardized patients to aide in their understanding of key anatomical concepts and allows them to apply this knowledge to a clinical setting.

Cardiovascular, Pulmonary and Renal Systems

The Cardiovascular, Pulmonary, and Renal Systems module is an interdisciplinary study of the anatomical, histological, physiological, biochemical, and pharmacological principles of these organ systems. The overall goal of this module is to provide a sound comprehensive knowledge base for

understanding the normal anatomical and microscopic structures, biochemical processes, and functioning of the cardiovascular, pulmonary and renal organs. Case studies and practical laboratory sessions are also presented as an integral component throughout the entire module. An introduction to inflammation, various cardiovascular, pulmonary and renal acid-base disorders will be explored to aid with the application and integration of the normal basic science principles into pathological disease process.

BPM 501 (17 credits)

Basic Principles of Medicine II (BPM2)

The Basic Principles of Medicine 2 (BPM2) course is a 17-credit course delivered over 18 weeks in Term 2 of the Doctor of Medicine (MD) program of St George's University School of Medicine, Grenada, and within the St. George's University of Grenada School of Medicine/Northumbria University Program (SGU/NU), in collaboration with Northumbria University, Newcastle upon Tyne, UK. It is part one of an organ system-based curriculum for the first academic year of the Basic Sciences program and is taught in three consecutive modules:

Endocrine and Reproductive Systems (ER) – 3 weeks

Digestive System and Metabolism (DM) – 4.3 weeks

Nervous System and Behavioral Science (NB) – 10.7 weeks

Total: 18 weeks

Endocrine and Reproductive (ER) Module

This module provides the knowledge and understanding of the gross and microscopic structure, physiology, biochemical processes and metabolic disorders in relation to the endocrine organs. This includes the study of gross and developmental anatomy, physiology, microscopic anatomy and cell biology of the male and female reproductive systems. Students will learn to integrate and apply this knowledge through examination of cadavers at wet lab sessions and, micrographs and radiological images in small group sessions. At the end of each system, pathological conditions are explained through micrographs and imaging relevant to the specific organ systems. Students will also cover developmental genetics, genetic screening techniques and facts about nutrition in relation to neonates, infants and the elderly. Students will be able to appreciate the normal structure and functions of these organ systems and will be able to correlate pathological outcome due to abnormal changes within the respective tissue.

Digestive System and Metabolism (DM) Module

In this module students learn about the anatomy and histology of the digestive system and actively integrate it with the biochemistry and physiological function of this organ system. Students will familiarize themselves with the digestion and metabolism of the macromolecules: carbohydrates, lipids and proteins and their nutritional significance. Special emphasis is placed on the inborn errors of metabolism associated with each of these metabolic pathways and the lab tests and the molecular basis for the clinical signs and symptoms of these disorders. The module will be interspersed with clinical cases and study of imaging and histology of the gastrointestinal tract. Clinical cases on inborn errors of intermediary metabolism and metabolic disorders enhances students' understanding of the importance of these aspects of metabolism.

Nervous System and Behavioral Sciences (NB) Module

This module is an interdisciplinary study of the structure and function of the head, neck and the peripheral and central nervous system, simultaneously addressing the anatomy, histology, physiology, biochemistry and some pharmacology and pathophysiology. Behavioral science (psychopathology), life span development and learning theory are covered, as well as the behavioral aspects of medicine. Neurological and psychiatric case studies will be presented as integral components. The overall goal is to provide students with knowledge and understanding of the effects of damage to the head, neck, spinal cord, and brain, as well as the behavioral disorders of cognition as presented in general clinical medicine and the specialties of Neurology, Neurosurgery, Psychiatry and Ophthalmology.

BPM 502 (8 credits)
Basic Principles of Medicine III (BPM3)

The Basic Principles of Medicine (BPM3) course is an 8-credit course taught over 6 weeks in Term 3 of the Doctor of Medicine (MD) program of St George's University School of Medicine, Grenada. The core aim of this course is to equip physicians with: the knowledge and skills to understand fundamental principles inherent to a future understanding and diagnosis of microbial infections; devise and utilize strategies that improve the health of entire communities and populations and help reduce health inequities among population groups; and to uphold standards of ethics and professionalism expected across North America.

The BPM3 course is sub-structured into four thematic areas:

Ethics, Professionalism and Medical Jurisprudence

A survey of bioethics introduces research ethics, public health ethics, medical and clinical ethics, professional ethics, and the professional responsibilities of today's physicians. These responsibilities derive from professional knowledge, attitudes, and practices involved in clinical medicine, medical research, and disease prevention, surveillance, and control. They stem from the medical profession itself, and from fundamental concepts of law and ethics related to the medical profession and doctor-patient relationships. Specific topics addressed include environmental health ethics, physician impairment, social and community ethics, patient autonomy and informed consent, beginning of life issues and termination of pregnancy, and end-of-life decisions. Fundamental concepts of law and ethics that relate to the medical profession are discussed, along with issues bearing on physician professionalism and boundary crossings. Societal trust and related concerns involving the regulation of medical practice are emphasized along with basic principles of patient privacy, confidentiality, medical malpractice and liability.

Basics of Immunology and Microbiology

Microorganisms are the single most significant contributor to human health and disease worldwide. The Basics of Immunology and Microbiology component focuses on presenting the fundamental principles of microorganisms in the context of their interaction with humans as the core knowledge necessary for effective and efficient diagnosis and treatment of infectious diseases. The course begins with an overview of microbial groups, introduction of some common pathogens, their features, replication strategies and basic mechanisms of pathogenesis. In parallel the key immunological principles will be discussed. This will facilitate cross-linkage and a more in-depth understanding of the body's natural defense mechanisms against infectious agents. Examples of immune system failure will be presented in the context of diversity of the infectious disorders and some primary immunodeficiency syndromes. This compound knowledge will allow students to understand how microbial growth and pathogenicity could be controlled through the use of therapeutic compounds combined with physical and chemical control methods. The detail as to the specific microbial infections that result from human-microbial interactions will be covered in MICR672 Introduction to Infectious Disease (Term 4).

Public Health Assessment Tools

Basic biostatistics concepts and tools are introduced, which will enable physicians to understand and critically examine the medical literature. Core concepts in clinical epidemiology, preventive medicine and evidence-based medicine that are most relevant to physicians are taught. Emphasis is on recognizing patterns of disease occurrence and disease outcomes in human populations and using such information to 1) inform diagnosis and treatment strategy in patient care; and to 2) foster application of ethically and scientifically sound principles in community intervention. Quantitative topics are enhanced with clinical examples from the medical literature, providing a transition from research findings to care of individual patients. The ways in which human behavior, the environment, and politics influences health in different societies are also considered. An international comparison of health systems is provided, and factors underlying existing disparities in healthcare is explored. Current issues in healthcare financing and delivery are discussed, along with insurance systems, cost containment, different types of medical practice, and medical practice economics.

Culture and Societal Issues/Physician-Patient Relationship

The biopsychosocial approach to patient care is introduced, and the role of cultural factors within the doctor-patient encounter is discussed. Emphasis is placed on development of cultural sensitivity and competence in the provision of care. The role of the family and the patient's social network are explored, and life-disrupting conditions such as substance abuse, domestic violence, child/elder abuse, and self-harm behavior are discussed with reference to the physician's role in detection and intervention.

PRINCIPLES OF CLINICAL MEDICINE

PCM 500 (21 credits)

Principles of Clinical Medicine I (PCM1)

PCM1 is a 21-credit course taught over 18 weeks in Term 4 of the Doctor of Medicine (MD) program of St George's University School of Medicine, Grenada. It is a systems-based curriculum for the second academic year of the Basic Sciences program and is taught in four consecutive modules:

Foundation to Clinical Medicine (4 weeks)

Cardiovascular and Renal Systems (4 weeks)

Respiratory and Hematopoietic Systems (4 weeks)

Digestive, Endocrine and Reproductive Systems (6 weeks)

Total: 18 Weeks

Foundation to Clinical Medicine Module (FTCM)

During this module students are introduced to the four disciplines through general principles. They learn about the basic principles of integrated patient and clinician- centered medical interviewing, physical examination and formulation of SOAP notes; the general principles of pathology including cellular injury and inflammation, neoplasia and hemodynamic disorders. They also learn about the basic principles of pharmacology including pharmacokinetics, pharmacodynamics, drugs affecting the autonomic system and pharmacology of pain. The module concludes with the study of skin, muscle and bone infections and skin pathology.

Cardiovascular and Renal Systems Module (CRS)

This module introduces the student to study of systemic diseases, utilizing the principles gained in the FTCM Module and their knowledge of normal anatomy, physiology and biochemistry from BPM1, 2 and 3. The module starts off with the Cardiovascular System wherein students learn about the cardiovascular diseases, cardiovascular infections and the drugs that are used to treat cardiovascular diseases. This is integrated with learning about a hypothesis-driven approach for a patient presenting with a cardiovascular and peripheral vascular complaint and performing a comprehensive physical examination of the cardiovascular and peripheral vascular systems. The next block is the Renal System where they learn about the renal diseases, urinary tract infections and conclude the module with pharmacogenetics and drugs used for coagulation.

Respiratory and Hematopoietic Systems Module (RHS)

During this module students' study about the Respiratory System wherein they learn about the pulmonary diseases, respiratory tract infections and the drugs that are used to treat some respiratory and mycobacterial diseases. They also integrate this with a hypothesis-driven approach for a patient presenting with a respiratory, head, eye, ear, neck and throat complaints and performing a comprehensive physical examination of these systems. The next block is the Hematopoietic System where they learn about the red and white blood cell disorders, this block is interspersed with teaching of anticancer pharmacotherapy. We conclude the module by learning about the blood and lymphatic infections and the drugs used to treat malarial infection.

Digestive, Endocrine and Reproductive Systems Module (DERS)

During this module teaching commences with the Digestive System wherein students will study

gastrointestinal diseases, infections, and the drugs used to treat some gastrointestinal diseases. They will also learn about a hypothesis-driven approach for a patient presenting with an abdominal complaint and performing a comprehensive physical examination of this system. The following block will take them through Endocrine Pathology, where they learn about the disorders affecting endocrine glands; this block also incorporates the teaching of pharmacotherapy of endocrinological conditions. We conclude the module by learning about diseases of the male and female reproductive systems, sexually transmitted infections, and the drugs acting on the uterus and contraceptives. Students will also learn to incorporate focused history and examination of patients with complaints about the endocrinological and reproductive system pathologies.

PCM 501 (19 credits)

Principles of Clinical Medicine II (PCM2)

The Principles of Clinical Medicine II (PCM 501) is a 19-credit course in Term 5 of the Doctor of Medicine (MD) program at the St George's University School of Medicine, Grenada. The first module completes the teaching of the basic science content allowing a smooth transition to the remaining modules that focus on the integration of multidisciplinary approaches to clinical scenarios that aid the students in preparation for their USMLE Step 1 Examination and their clinical years.

PATH 500 (4 credits)

Basic Sciences Foundation for Clinical Reasoning (BSFCR) The BSFCR course is delivered using Small Group case based sessions only. These small group sessions are student-driven, group discussion sessions that are organized in 50-minute case based session starting from presenting symptoms only. The course is not organized by system, but contains a random assortment of typical presenting symptoms for a variety of cases for all of the organ systems, and multi-systems cases. The sequence of the systems is not matched with the PCM2 course intentionally as the student development of the cases is meant to proceed by clinical reasoning skills alone and not by place in curriculum.

The objectives of basic sciences are discussed using multiple clinical vignettes, in a student led session with a training facilitator. For each case students receive a presenting symptom, equivalent to the first line of an NBME test item; through group discussion the students will form a hypothesis for the presenting problem and then work through

- What further questions would be asked to differentiate between hypotheses (history)
- What physical examination findings would be expected and how would they help to refine the hypothesis
- What investigations would be helpful and how they would corroborate or refute hypothesis
- What do the laboratory findings indicate and how do they apply to the hypothesis
- Integrate all of the elements and summarize the final hypothesis with a summary statement of supporting elements using appropriate semantic qualifiers.

The clinical tutors monitor, guide, emphasize and correct the facts being discussed. In every small group session, the students are expected to demonstrate Professional behavior (PB), effective communication and interpersonal skills (CS) and demonstrate focused and analytical approach to the case. At the end of the session, all students should have differential diagnosis and a summary of the main elements of the case with supporting and refuting evidence.

Each week will contain a formative assessment at the end of the week comprised of UWorld MCQs.

- 5 DLA style lectures on summary statements and semantic qualifiers
- Uworld access 3 hours per week contributed to quizzes
- 11 case based small group sessions- 33 clinical cases
- 12 DLA based case reviews- guided case summaries
- 4 h comprehensive written assessment at the end of the course

A make-up examination will be offered 5 times per year: March, May, July, October, December.

Clinical Years - Academic Years Three, Four, and Five

42 weeks—Core Rotations

Medicine: **12 weeks**

Surgery: **12 weeks**

Pediatrics: **6 weeks**

Obstetrics/Gynecology: **6 weeks**

Psychiatry: **6 weeks**

38 weeks—Sub-internships and Electives

Family Medicine: **4-6 weeks**

Sub-internship: **4 weeks**

Medicine Elective: **4 weeks**

Additional Electives: **24-26 weeks**

The Clinical Years consist of five terms for a total of 80 weeks.

This listing does not indicate the sequence of courses. The core rotation schedules are determined by the Office of Clinical Education Operations. In general, students complete their core rotations before doing additional requirements and electives. Electives listed are examples of the many options available. Elective choices and schedules are arranged individually by students, in consultation with the hospital administration.

Hospitals have the option of requiring students to attend an orientation. This orientation can last up to a week and is a non-credit experience.