

COMPENDIUM: FOUR-YEAR MD PROGRAM

ST. GEORGE'S UNIVERSITY SCHOOL OF MEDICINE

INTRODUCTION

Innovations in medical curricular are necessary for the preparation and training of physicians to meet the dynamic changes that are occurring in the delivery of health care in the 21st century. The advent of new technology, complementing the explosion of medical knowledge, requires continuous review and modifications of medical curricular. St. George's University School of Medicine (SGUSOM) has developed a curriculum that focuses on the needs of its medical students to function in the modern health care system.

The medical curriculum is a four-year program of vertical and horizontal integration of teaching, of which the first 2 years are spent on courses in the basic sciences, followed by 2 years of clinical training. The first year of the basic sciences is taught on 2 campuses, one in Grenada and the other at Northumbria University in the UK. The second year of the basic sciences is taught in Grenada. Year 3 consists of core rotations in the major clinical disciplines at various hospital centers in the USA and UK. Year 4 consists of clinical electives in the USA and UK, following which the students are awarded the MD degree at the graduation ceremony in New York.

EDUCATIONAL PROCESS

The MD program is divided into 2 years of Basic Sciences and two years of Clinical. The Basic Sciences years are taught at our campuses in Grenada and the UK and the clinical years are taught in the US and UK.

The emphasis throughout the whole curriculum is on active learning by the students in a clinical context. This is achieved in the Basic Sciences years by introducing several clinical vignettes in the lectures, labs and small groups in all the Basic Science courses and making the students to conceptualize the basic science principles that constitute the backbone of the symptoms, signs, investigations and the management principles. Faculty and audiovisual resources have been developed for this purpose. There is a cadre of over 90 clinical MD tutors with a wide range of experience. They supervise all the small group and lab activities of the students in the basic science course. Thus every group of 10 to 12 students are intensely monitored and mentored on a daily basis through these small groups and lab sessions by the clinical tutors. The clinical tutors and clinical instructors help the course Faculty to orient their courses to ensure clinical relevance. There is every attempt made at horizontal and vertical integration during the basic sciences years not only in the construction of course objectives but also objectives from other related courses in the small groups and the same set of clinical tutors conducting the small groups across the different disciplines. Thus the clinical orientation of the basic sciences courses lays down a very strong foundation in clinical reasoning. The number of senior faculty is augmented by a large number of distinguished Visiting Professors (VPs) from North America, the UK and the Caribbean who bring in their vast clinical and research experience into the teaching sessions of the basic sciences. Some of them are SGU alumni or teaching faculty in the clinical years for our students. This helps the vertical integration across the four years. There are two highly specialized teaching labs that ensure active learning and individual attention for the students' development. One is a multimedia lab used by Anatomy, Histology, Biochemistry, Bioethics, Pathology and Basic Sciences Foundation for Clinical Reasoning (BSFCR) courses for the small group activities. The lab has over 30

study tables around each of which 12- 13 students can be easily accommodated. Each has a large display unit at one end and a laptop. All the computer units in the lab are synchronized with the Instructor laptop near the podium for joint interaction. Each group around the small table is monitored by a Clinical Tutor. The Clinical Instructors and senior Faculty circulate between the groups to address any contentious discussion items that may crop up. The group activity also provides a platform for close observation and evaluation of professional behavior. There is also a specialized clinical skills lab that consists of 22 hospital room like situations with a central nursing station. There is a faculty preceptor in each of the rooms to personally teach/monitor and evaluate the history taking and physical diagnosis skills. The school also has purchased a state of the art IT software called "B-line" that enables the recording of each of the student's performance for feedback/evaluation and archiving. It is being processed now and hoped to be functional by January 2011. It enables the faculty to pay individual attention to the students and provide a clear feedback and evaluation. The school has added a state of the art simulation laboratory and efforts are underway to include some hands on training for the medical students in clinical skills in that lab.

The second year of Basic Sciences becomes more of a clinical reasoning activity based on the Basic Sciences skills already acquired by the students. The evaluations for the clinical reasoning and clinical skills are done in individual courses and comprehensively using a variety of tools like MCQs, modified essay questions, personal observations of small group activity, concept maps, image/specimen/cadaver based questions etc. as detailed later in the compendium.

The training in clinical years reinforces the concepts learnt in Basic Sciences and applications in patient management.

THE DOCTOR OF MEDICINE PROGRAM

MISSION

To provide an international, culturally diverse environment in which students learn the knowledge, skills and attitudes required for postgraduate training in the health profession, while being inspired to develop compassion, curiosity, tolerance and commitment to patients and society, dedication to life-long learning and an understanding of the vital role of research in health care.

FOUR YEAR OUTCOME OBJECTIVES

1. Medical Knowledge

- a. Apply the multidisciplinary body of basic sciences to clinical analysis and problem solving using:
 - i. The knowledge of normal structure, function, physiology, and metabolism at the levels of the whole body, organ systems, cells, organelles and specific biomolecules including embryology, growth and development.
 - ii. The principles of normal homeostasis including molecular and cellular mechanisms.
 - iii. The etiology, pathogenesis, structural, and molecular alterations as they relate to the signs, symptoms, laboratory results, imaging investigations, and causes of common and important diseases conditions.
- b. Incorporate the impact of factors including psychological, cultural, environmental, genetic, nutritional, social, economic, religious, and developmental on health and disease of patients as well as their impact on families and caregivers.
- c. Utilize the important pharmacological and non-pharmacological therapies available for the prevention and treatment of disease based on cellular and molecular mechanisms of action and clinical effects. Identify and explain factors that govern therapeutic interventions such as clinical and legal risks, benefits, cost assessments, age, and gender.
- d. Apply the theories and principles that govern ethical decision-making in the management of patients.
- e. Evaluate and apply clinical and translational research to the care of patient populations.

2. Clinical Skills

- a. Communicate effectively with patients, their families, and members of the health care team.
- b. Obtain a comprehensive and/or focused medical history on patients of all categories.
- c. Perform physical and mental status examinations on patients of all categories appropriate to the patient's condition.
- d. Document pertinent patient health information in a concise, complete, and responsible way.
- e. Select appropriate investigations and interpret the results for common and important diseases and conditions.
- f. Recognize and communicate common and important abnormal clinical findings.
- g. Develop a problem list and differential diagnosis based on the history, physical findings, and initial investigations.
- h. Apply effective problem solving strategies to patient care.
- i. Perform routine and basic medical procedures.
- j. Provide patient education with respect to health problems and maintenance.
- k. Identify individuals at risk for disease and select appropriate preventive measures.
- l. Recognize life-threatening emergencies and initiate appropriate primary intervention.
- m. Outline the management plan for patients under the following categories of care: preventive, acute, chronic, emergency, end of life, continuing, and rehabilitative.
- n. Continually reevaluate management plans based on the progress of the patient's condition and appraisal of current scientific evidence and medical information.

3. Professional Attitude

- a. Establish rapport and exhibit compassion for patients and families and respect their privacy, dignity, and confidentiality.
- b. Demonstrate honesty, respect, and integrity in interacting with patients and their families, colleagues, faculty, and other members of the health care team.
- c. Be responsible in tasks dealing with patient care, faculty, and colleagues including health care documentation.
- d. Demonstrate sensitivity to issues related to culture, race, age, gender, religion, sexual orientation, and disability in the delivery of health care.
- e. Demonstrate a commitment to high professional and ethical standards.
- f. React appropriately to difficult situations involving conflicts, nonadherence, and ethical dilemmas.
- g. Demonstrate a commitment to independent and life long learning including evaluating research in health care.
- h. Demonstrate the willingness to be an effective team member and team leader in the deliver of health care.
- i. Recognize one's own limitations in knowledge, skills, attitudes, and the need for asking for additional consultation.
- j. Participate in activities to improve the quality of medical education including evaluations of courses and clerkships.

The detailed information on the objectives for each course in basic sciences and the clinical rotations can be found online in the document named "Learning Objectives for the four-Year MD program" under My SGU.

1ST YEAR

TERM ONE

The first year is divided into terms 1 and 2. The courses taught in Term 1 include Anatomical Sciences, Histology and Cell Biology, Biochemistry and Bioethics and the Professional. All the courses start at the beginning of the term but the course on bioethics runs for the initial two weeks only.

Term 1a: Human Gross and Developmental Anatomy (ANAT 550)

The course in human gross and developmental anatomy is devoted to cultivating a solid comprehension of the human body and its development. This is accomplished by listing specific learning objectives consistent with the presentation of the course in lectures and subsequent laboratory sessions. The lectures present general, applied, radiological and clinical aspects of anatomy integrated with embryology, as well as appropriate interdisciplinary components. Moreover, lectures are designed to emphasize and explain important anatomical and clinically related concepts. All lectures are subsequently placed as audiovisual presentations on the University's website for students' use. The course follows a sequence of study of the human body from the back, upper extremity, thorax and abdomen, prior to midterm examination, and continues with the pelvis, perineum, lower extremity, and head and neck for the final examination.

Complementing the lectures are laboratory studies on prosected and plastinated cadaver specimens, together with small group discussions (SGD) and dry lab sessions (DLS), all designed to develop and encourage teamwork and group learning.

Each week the students spend 1 hour in the laboratory rotating through 7 stations of cadaver material, images and bones, each listing structures they must identify, with assistance from faculty when necessary. Moreover, prior to the laboratory sessions, dissection videos are made available on the University's website for students' use.

Each week the students spend 2 hours in SGD and congregate in groups of 8-9 with one assigned clinical tutor to undertake the following:

- 60 minutes of problem based learning where a number of clinical cases are presented and discussed.
- 30 minutes of physical examination where they conduct a list of physical examination exercises on one another. Prior to these sessions audiovisual presentations of the physical examination techniques are made available to the students on the University's website.
- 30 minutes of discussion of a review article from a peer review journal. Students are given the articles at the start of the course and are expected to present and discuss the relevant anatomical content.

Each week the students spend 1 hour in DLS in groups discussing clinical cases presented on radiological images, with faculty and clinical tutors available for assistance.

The specifics of the course are as follows:

Number of credits:	8
Number of lectures:	82
Number of laboratory sessions:	14
Number of SGDs:	14
Number of DLS:	14

Quizzes and examinations:

Unified Quiz	(25 questions)
10 online quizzes	(12 questions each)
Midterm examination	115 questions
Final examination	115 questions

Distribution of Points:

Midterm exam	
Written	90
Practical	50 (virtual and lab practical)
Final exam	
Written	90
Practical	50 (virtual and lab practical)
Unified quiz	25
10 Online quizzes	20
Total	325 points

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	89.54–100%
B	78.77–89.23%
C	67.69–78.46%
F	< 67.38%

Items of outcome objectives and mission statements addressed in the course:

- 1a i, iii; 1b, 1c,
- 2 c, d, e, f, g, i, l,
- 3 b, c, d, g, h, i

Term 1b: Histology and Cell Biology (ANAT 531)

The course in histology and cell biology is devoted to cultivating a solid comprehension of the normal structure and functions of the tissues and organs of the human body, as revealed by light and electron microscopy, as well as by histo- and cytochemical techniques. This is accomplished by listing specific learning objectives consistent with the presentation of the course in lectures and subsequent laboratory sessions. The course follows a sequence of study commencing with general cell morphology, cell renewal, cell differentiation, interactions, signaling, aging, death, and the effects of extracellular matrix. Subsequently, the four basic tissues and their arrangements into organ and organ systems of the body are discussed. The lectures present general, applied and clinical relevance of the cells and tissues of the body, with integration to relevant topics in Anatomy, Biochemistry and Physiology. Moreover, since basic pathologies are the result of abnormal cell and tissue functions, the course highlights some important relevance to the study of pathology. All lectures are subsequently placed on the University's website for student use.

Complementing the lectures are laboratory sessions for 2 hours per week, during which time students form groups of 8-9 in small group discussions (SGD) with an assigned tutor to undertake the following:

- 90 minutes of problem based learning where a number of clinical cases are presented and discussed, along with the relevant histological images.
- 30 minutes of physical examination, complementing the physical examination exercises in the ANAT 550 course.

Number of Credits: 4
Number of Lectures: 50
Number of Small Group Discussion: 15

Quizzes and examinations:

Unified Quiz	25 questions
17 online quizzes	10 questions each
Midterm examination	150 questions
Final examination	150 questions

Distribution of Points:

Unified Quiz	25 points
Midterm Exam	150 points
Final Exam	150 points
Online Quiz	10 points
Small Group Attendance	10 points
Total	345 points

Determination of Grades:

<i>Letter Grade</i>	<i>Percent</i>
A	88%
B	78%
C	68%

Items of outcome objectives and mission statement addressed in this course:

- 1a i, ii, iii; 1b; 1c
- 2e, f
- 3b, c, d, g, h, i

Term 1c: Medical Biochemistry (BCHM 550)

The course provides the biochemical basis for understanding important concepts in the subsequent courses in the medical curriculum and prepares students to pass the BSCE and USMLE examinations. It also provides the students with a working knowledge of Biochemistry that will be needed for practicing physicians.

Number of credits: 5
Number of lectures: 77
Number of small group sessions: 7

Quizzes and examinations:

Unified Quiz	(25 questions)
4 online quizzes	(10 questions each)
1 online graded quiz based on small group discussion	(10 questions)
Midterm examination:	75 questions
Final examination:	75 questions

Distribution of points::

Unified Quiz	25 points
Midterm Exam	150 points
Final Exam	150 points
Online Quiz #1	2.5 points
Online Quiz #2	2.5 points
Online Quiz #3	2.5 points
Online Quiz #4	2.5 points
Small Group Att.	10 points
Small Group Quiz	10 points
Total	355 points

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percentage</i>
A	88–100 %
B	76–87.99
C	65–75.99
F	< 65%

Items of outcome objectives and mission statements addressed in this course:

- 1a i, ii, iii; 1b; 1c
- 2 e, f
- 3 b, c, d, g, h, i

Term 1d: Bioethics and the Professional (Medicine in Society I) (BIOE 501):

This course aims to strengthen a student's ability to recognize and critically analyze ethical concerns in medical situations. It provides opportunities to develop professional competencies and skills. Students will begin to access credible information (medical informatics), formulate and express reasoned opinions, manage uncertainty and communicate collegially.

Bioethics is a discipline grounded in the reasoning and objectivity necessary to beneficial health outcomes and patient satisfaction. It provides structure and tools with which to address the numerous moral conflicts in medicine. Bioethical concepts and terminology introduced in the course center on professionalism, principles, and theories, which are applied to patient scenarios and current medical controversies.

Interactive participation occurs through group discussions, online activities and during lectures. The course encourages students to monitor their own professional development. It is anticipated that passing this course will motivate and enable each student to reflect on their own professional competencies and duties as these evolve during different stages of their medical education.

Number of credits:	1
Number of lectures:	11
Number of small groups:	each student attends 3
Number of Library Informatics Sessions:	each student attends 1

Quizzes and Examinations:

- 1 practice quiz online not for credit (10 questions: mirrors the final exam)

1 final examination: 60 questions

Distribution of points:

3 Small Groups (SG) 12 points	(4 points for participation in each group)
1 Informatics Lab (Inf Lab)	4 points for participation
3 Assignments on ANGEL	4 points in total (for submitting 3 assignments on time and following instructions)
Subtotal	20 points (10% of final grade)
Final Exam	180 points (3 pts per question 90% of final grade)
Total	200 points

Calculation of letter grades:

<i>Letter grade</i>	<i>Percent</i>
A	≥ 89.5%
B	≥ 79.5%
C	≥ 69.5%
F	< 69.5%

Items of outcome objectives and mission statements addressed in the course:

- 1ai, 1b, 1d
- 2a, 2h
- 3 a, f, h, i

TERM 2

The courses in Term 2 include; Neuroscience, Physiology, Immunology, Parasitology, Community and Preventive Medicine and Genetics. The last two courses are taught in the first two weeks of the course. The Immunology course concludes about two weeks before the end of the other courses in the term.

Term 2a: Physiology (PHYS 560)

The aim of this course is to provide each student with a clear understanding of the most important concepts and principles of medical physiology as well as an introduction to basic pharmacology. The course has two principal components – lectures and small group sessions. The lectures provide the information base while the small group sessions provide the student with an opportunity to assimilate and integrate the material within a small-group setting.

The course is divided into two sections. The first half covers cellular and cardiovascular physiology and an introduction to pharmacology. The second half covers gastrointestinal, renal, pulmonary, endocrine and reproductive physiology. Appropriate clinical perspectives are presented throughout the course.

The small group sessions consist of two laboratory, four Clinical Case discussion and two Team Based Learning sessions.

Laboratory

Two human laboratory exercises pertaining to cardiovascular and respiratory physiology are included in the course. For each of the laboratories, students work in groups of 6 to 7. Each group is assisted by a faculty member.

Clinical Case Studies

Four clinical case studies pertaining to cardiovascular, gastrointestinal, respiratory, renal and acid-base regulation are included in the course. For this portion of the program, classes are broken up into small discussion groups of 6 to 7 students.

Team-Based Learning

Two team-based learning sessions are included as part of the small group sessions. This involves student interaction in the solving of physiological problems. This is facilitated by a faculty member. The classes are broken up into small discussion groups of 6 to 7 students.

Number of credits: 6

Number of lectures: 87

Number of small group sessions: 8

Quizzes and examinations:

Midterm examination: 80 questions
 Final examination 102 questions
 No graded quizzes

Distribution of Points:

Midterm Exam 80 points
 Final Exam 102 points
 Small Group Participation 8 points
 Total 190 points

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	89.51 -100 %
B	80 – 89.50
C	69.50 – 79.51
F	<70%

Items of outcome objectives and mission statements addressed in the course:

1a, 1c, 1e
 2 f, 2h, 2i
 3b, 3c, 3e, 3g, 3i

Term 2b: Neuroscience (PHYS510)

The course is an interdisciplinary study of structure and function of the nervous system. It aims to provide a contemporary and thorough grounding in cellular, molecular and systems neuroscience. This knowledge serves as a basis for understanding the effects of damage to the nervous system as seen in general clinical medicine and in specialties such as Neurology, Neurosurgery, Psychiatry and Ophthalmology. Neurological case studies and clinical correlations are presented as disorders of normal function and are included as an integral component wherever possible. The course further aims to facilitate the development of professional competencies, which include clinical reasoning, training of clinical skills used in Neurological examinations, basic interpretation of modern imaging techniques, and team-based inter-personal skills, in particular during small group practical and other interactive settings.

Lectures

The first few weeks of the course include a general overview of basic elements in the modules of neuroanatomy and cellular Neuroscience. A module on the development of the central nervous system includes the embryological basis as well as the underlying molecular and genetic mechanisms. These are followed by the study of modules on sensory systems, motor systems, autonomic control

systems, complex brain functions and disease processes, including higher cortical functions and neuropathology.

Buzz Group Discussions of Clinical Cases

Clinical case discussions (small group activities within a lecture hall setting) are scheduled leading towards midterm and final examinations and are intended to facilitate the application of clinically relevant knowledge and understanding gained during the preceding lectures.

Small Group Practical Sessions

About 6 students each are assigned to a small group, assisted by faculty member, focusing on models and imaging during the small group practical module of neuroanatomy, and the practice of neurological examination, review of the underlying circuitries and discussion of normal and pathological responses during the small group practical module of neurological examination. Clinical cases related to the core content of each session are an integral part, as well as an online component.

Number of lectures: 58 hours

Lab sessions, small groups: 10 x 2 hours small group practical sessions (50% component of SG assessments listed below)
16 hours of buzz group sessions

Quizzes and examinations:

Quizzes: 10 online tests and quizzes (50% component of SG assessments listed below)

Midterm questions: 80 questions

Final exam questions: 80 questions

Distribution of Points:

A total of 170 assessment points can be earned in the course, as listed in the table below:

<i>Assessments</i>	<i>Points</i>
SG Assessments (SG 1 to SG 5)	5
Midterm Examination	80
SG Assessments (SG 6 to SG 10)	5
Final Examination	80
Total:	170

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	≥ 90%
B	≥ 80%
C	≥ 70%
F	< 70%

Items on the outcome objectives and mission statement addressed in the course:

1a, b, c, d, e

2a, b, c, d, e, f, g, h, i, j, k, l, m, n

3a, b, c, d, e, f, g, h, i

Term 2c: Medical Immunology (MICRO 580)

This course is designed to provide students (i) the basic principles and mechanisms underlying the elements of the immune system with an emphasis on the interaction between innate and acquired immunity in response to infection, (ii) essential immunological features

of various clinical disorders and vaccines, (iii) an understanding of Translational Medicine as it applies to immunological disorders and emerging novel therapies.

There is an emphasis on the interaction between innate and acquired immunity in the response to infection. Mechanisms by which immunological compartments interact and clinically related topics are also emphasized. In addition to classroom instruction, students spend 10 hours in solving patient-oriented clinical simulations, including small-group discussions.

Number of credits: 2

Number of lectures: 32

Number of small group sessions: Not free standing- some attempt during clinical lectures in lecture hall

Quizzes and examinations:

Class quizzes	no points
Midterm examination	50 points (100 questions)
Final examination:	70 points (70 questions)

Distribution of points:

Midterm Exam	50 points
Final Exam	70 points
Total	120 points

Calculation of letter grades:

Letter Grade	Percent
A	89.5-100 %
B	79.5 – 89.4%
C	69.5 – 79.4%
F	<69.5%

Items of outcome objectives and mission statement addressed in course:

- 1a i,ii, 1c, 1d, 1e
- 2g, 2h
- 3b, 3e, 3f, 3g, 3h, 3i

Term 2d: Public Health and Preventive Medicine: Topics in Community and Preventive Medicine (CPM) in Society II (PUBH 501)

This course focuses on disease prevention, health promotion and population health, and the integration of each in the practice of medicine.

Course Description

This course focuses on contemporary topics and issues in the field of community and preventive medicine — disease prevention, health promotion, and population health — and how these issues affect physicians in clinical practice. As the second component of the Medicine-in-Society course series, this course addresses the interaction between the practice of medicine and society, and gives special attention to disease prevention strategies used in clinical practice. The first part of the course focuses on the three pillars of preventive medicine — screening, counseling, and immunizations. The second part of the course addresses the interaction and contributions of public health information to day-to-day clinical practice, as well as the expectations, interaction, and contribution of physicians in clinical practice to the public health infrastructure. In considering these issues in community and preventive medicine, the

course continues to promote the overarching themes of professionalism, ethics, and the societal, legal, economic, and cultural contexts in which medicine is practiced. Structurally, the course includes 13 seminar-style lectures and one small-group interactive workshop.

Course Learning Objectives

Following successful completion of this class, students should be able to:

- Describe the relevance of community medicine and preventive medicine to clinical practice
- Describe at least three disease prevention strategies that are components of successful clinical practice
- List three ways in which the public health system provides useful information to physicians in clinical practice
- List three ways in which physicians in clinical practice provide useful information to the public health system
- For at least two contemporary health issues discussed in the course, describe the competing concerns and perspectives that affect ethical, individual, clinical, or public policy decision-making

Small Group Workshop: Motivational Interviewing

- Describe the process of physician-based motivational interviewing to enhance behavioral health
- Demonstrate elements of motivational interviewing in a clinical setting

Online Course Management System

Student learning is facilitated by an electronic course management system, where course materials, supplemental materials and lectures can be reviewed online, and students can take self-assessment quizzes.

Number of credits: 1

Number of lectures: 13

Number of small group sessions: 1 (Interactive Workshop, 2 hours)

Quizzes and examinations: Final examination: 50 Questions

Distribution of Points:

Final Examination	50 points
Total	50 points

Calculation of letter grade:

<i>Letter Grade</i>	<i>Percent</i>
A	89.5%
B	79.5%
C	69.5%
F	<69.5%

Items of outcome objectives and mission statements addressed in course:

- 1b, 1d, 1e,
- 2b, 2d, 2j, 2k, 2m, 2n,
- 3a, 3c, 3d, 3e, 3f, 3g, 3h, 3i,

Term 2e: Medical Parasitology (MICR 660)

In this course emphasis is balanced between parasitic infections that frequent the tropics and those that are being increasingly recognized in the temperate zones. The growing importance of zoonotic infections and the role of human behavior and that of physicians and veterinarians in disease control is emphasized. Approximately half of the course deals with medical protozoology,

including the amoebas, flagellates and sporozoa. The second part of the course covers medical helminthology: the trematodes, cestodes and nematodes. Arthropods of medical significance as they act as vectors of the parasites covered are also discussed. Presentations of the various organisms emphasize the public health and economic importance, epidemiology, symptomatology, pathogenesis, diagnosis, treatment and control.

Laboratory

There are no laboratory sessions but the course is abundantly illustrated and there is a laboratory section in the online handbook which can be completed voluntarily. It provides a practical way of informing the students about the various diagnostic tests that are used to diagnose parasites – including indirect imaging techniques, such as ultrasound.

Number of credits: 1

Number of lectures: 16

Quizzes and examinations:

1 online quiz	(72 questions 0 mirrors the final exam and is set for practice)
Final examination	72 questions

Distribution of points:

Final Exam	72 points (= 100%)
Online Quiz	2 bonus points for submission on time, 2 bonus points for getting > 80% correct
Total	76 points

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	90% and above
B	80–89%
C	65–79%
F	below 64%

Items of outcome objectives and mission statements addressed in the course:

1a i, 1a ii, 1a iii,
1b, 1c
2a, 2b, 2d, 2e, 2g, 2j, 2k, 2l

Term 2f: Medical Genetics (BCHM 590)

The Medical Genetics course provides the students with a working knowledge of genetics they can use as practicing physicians, to provide the genetic basis for understanding the subsequent courses in the medical curriculum.

This course reviews basic genetics and its applications to the student of inherited disorders. It begins with a study of the chromosomes and the disorders that result from their aberrations. Exploration of Mendelian and multifactorial inheritance follows, illustrated by representatives of the major heritable disorders of man. The study of population genetics and its importance to medicine is explored. There is coverage of molecular and clinical genetics, including prenatal diagnosis and genetic screening. There is an introduction to pharmacogenomics and the concept of 'individualized medicine'. The course concludes with introductions to growth points in modern genetics, cancer genetics, gene therapy, the Human Genome Project and their clinical implications. The course will move to a 2 credit course in Spring 2011.

Number of credits: 1

Number of lectures: 16

Quizzes and examinations:

Quizzes: 2 online quizzes (10 questions each)

Final examination: 50 questions

Distribution of points:

Final Exam 100 points

Online Quiz #1 1 points

Online Quiz #2 1 points

Total 102 points

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	90% and above
B	80–89%
C	70–79%
F	below 69.5%

Items of outcome objectives and mission statements addressed in this course:

1a i, 1a ii, 1a iii; 1b; 1c

2ND YEAR

TERM 3

Term 3a: Behavioral Sciences and Medicine (BEHS 640)

This broad, 6 credit hour course aims to contribute meaningfully to the education of skilled physicians who are able to effectively integrate biomedical, clinical, and behavioral knowledge, leading to improved patient well-being and community health. The course comprises the third component of the 'medicine in society' course series, and is divided into three content modules:

- Module 1: Behavioral Science
- Module 2: Biostatistics, Epidemiology & Health Systems
- Module 3: Medical Jurisprudence & Clinical Ethics

Module 1:

Introduces the student to the fundamental principles of human behavior and development, with particular emphasis upon the role of behavior within the context of illness and the medical encounter. Theories contributing to the understanding of normal human development and psychopathology are examined. There is an emphasis on the doctor-patient relationship, professionalism, and on the importance of effective communication, rapport and empathy in patient adherence and positive health outcomes.

An overview of several major psychological theories of human behavior is provided, including psychodynamic, behavioral, cognitive, and biological models. Exposition of these systems leads to discussion of a number of topics, including psychopathology and diagnosis, biological/genetic bases of behavior, brain-behavior relationships, psychotherapy, sexual functioning and identity, psychological assessment, suicide, complementary medicine, and psychopharmacological intervention. An evidence-based approach is emphasized in the evaluation of treatment effectiveness. The field of behavioral medicine is introduced, and the role of cognitive-behavioral approaches in the modification of health behavior is discussed.

There is an emphasis throughout the course upon a biopsychosocial approach to patient care. Special attention is given to the crucial role of cultural factors within the doctor-patient encounter and the health care setting, including the importance of cultural sensitivity and cultural competence in the provision of medical care. Within the context of social support, the role of the family and the patient's social network is explored, and such life-disrupting disorders as substance abuse, domestic violence and child abuse are discussed with reference to the physician's role in detection and intervention.

Module 2:

Quantitative principles of medicine are introduced in this module. An introduction to biostatistics provides fundamental topics that quantify variation and uncertainty experienced within the science of medicine. Clinical epidemiology involves concepts of epidemiology, preventive medicine and evidence-based medicine tailored to the needs of future clinicians. Special emphasis is on recognizing the patterns of disease occurrence and disease outcomes in human populations, using that information to begin mastering the skills needed to decide on diagnostic strategy and therapeutic interventions, and applying sound scientific principles to patient care. All quantitative topics are enhanced through clinical examples from the medical literature, providing a transition from research findings to care of individual patients.

How behavior, environment and politics influence health in different societies is also considered in this module – an international comparison of the health systems of several countries is provided, and factors underlying existing disparities in health care are explored. Current issues of health care financing and delivery are discussed, along with the important changes in insurance systems, cost containment and different types of medical practice.

Module 3:

The fundamental concepts of law that relate to the medical profession are covered in this module. The concerns of society in the legislative, judicial and administrative regulation of medical practice are emphasized. An overview is provided of the current and probable future expansion of society's role in the regulation of medical practice of medicine. The basic principles of malpractice are discussed, along with such topics as informed consent, medical ethics and confidentiality. The module surveys the history of medical ethics and compares the major perspectives on such issues as the conflict between different types of benefits to patients, the duties of a physician, patient autonomy, termination of pregnancy and end-of-life decisions, social ethics and rationing of services.

Small-Group Activities:

Small-group sessions focus on relevant topics introduced in lecture, with each group consisting of 6 students. The format varies depending on topic, and may involve discussion around case-based clinical videos, interpretation of clinical data, critical evaluation of the medical research literature, or application of epidemiological principles to clinical decision-making. Sessions are led by Behavioral Sciences Department faculty with additional support by visiting professors. Students rotate in the role of group facilitator.

- | | |
|--|------------|
| 1. Biostatistics Small-Group Exercise: | 1.5 hours |
| 2. Cross-cultural Communication Small-Group: | 1.25 hours |
| 3. Evidence-based Medicine Small-Group: | 1.25 hours |
| 4. DSM-IV Diagnosis Small-Group: | 1.25 hours |
| 5. Epidemiology I Small-Group - Screening: | 1.25 hours |
| 6. Epidemiology II Small-Group - Study Design: | 1.25 hours |
| 7. Medical Jurisprudence & Ethics Small-Group: | 1.25 hours |

Number of credits: 6

Number of lectures: 94 hours

Number of small group sessions: 7

Quizzes and Examinations:

- | | |
|----------------------|---|
| Quizzes: | Online not-for-credit quizzes for each lecturer (15 quizzes; ≈ 25 questions each) |
| Midterm Examination: | 120 questions |
| Final Examination: | 120 questions |

Distribution of Points:

- | | |
|------------------------|------------------------------------|
| Midterm Exam | 120 points |
| Final Exam | 120 points |
| Small Group Attendance | 3 points (treated as extra credit) |
| Total | 243 points |

Calculation of letter grades:

- | <i>Letter Grade</i> | <i>Percent</i> |
|---------------------|----------------|
| A | ≥ 90% |
| B | ≥ 80% |
| C | ≥ 70% |
| F | < 70% |

Items of outcome objectives and mission statement addressed in the course:

- 1a iii, 1b, 1c, 1d, 1e
- 2a
- 3 a, 3b, 3d, 3e, 3f, 3g

TERM 4

Term 4a: Pathology (PATH 640)

The course is taught in two segments – General Pathology and Systemic Pathology. The main emphasis of the course is on active learning by the students based on clinically oriented lectures and daily clinical problem-solving by students in groups of 10 during lab hours. This is accomplished by targeted discussions using pathology images (about 400) representing patients and clinical vignettes with built-in questions. The images are posted on the University website and made freely available on CDs to students. Periodically, gross specimens and glass slides from current hospital material are also discussed. The discussions are closely monitored by the faculty and each student is evaluated on a daily basis.

The General Pathology segment deals with how tissue responds to injury, cell death, inflammation, ischemia, thrombosis, embolism, infarction, etc. It also deals with response to infections, environmental pollutants and disease states related to abnormal immune responses. Mechanisms of tumor development and how tumors spread are studied under “neoplasia.” This is followed by a special course on molecular pathology techniques as applied to clinical practice.

The Systemic Pathology segment involves similar principles, but applied in detail to individual organ systems like cardiovascular, respiratory, etc. It will also include interpretation of laboratory data for some of the major disease processes. A short course forensic pathology is taught in the Systemic Pathology module. Several clinicopathological conferences, including difficult case seminars, are also discussed by students.

Laboratory

The lab sessions are conducted as group activities in student groups of 10 – 12 monitored by a clinical tutor. The students discuss gross and microscopic pathology images, electron micrographs, radiographic images and clinical cases which correlate with the concurrent lecture manual. The process involves active learning with guided discovery of etiology, pathogenesis, structural changes, clinical symptoms and signs, relevant investigations, and course of the disease for the common and prototype diseases. The students are also encouraged to learn how to distinguish between related entities. In addition, students learn to draw blood samples and do basic hematology tests on them.

Exams, quizzes & grades

There are two midterms and a final exam. The first midterm has 120 questions, the second midterm and the final have 140 questions each (total 400 questions, 400 points). In addition, there are five in-course assessments conducted during the lab hours consisting of ten modified essay questions each (total 50 points). This brings the total points they can earn through various exams to 450. The students are monitored and evaluated continually in the group activities in the lab and each student can earn a maximum of 5 points for professionalism. Five (5) clinicopathological correlates are conducted in the course and constructive participation in these activities can earn 5 points for professionalism for each student. In addition each student is expected to submit at least one concept map per week with a minimum of 10 maps over 10 weeks of instruction. This activity earns them a maximum of 10 points for professionalism. Thus there is a total of 25 professionalism points that a student can earn throughout the course. These are added to the final scores after the 3 exams. The denominator remains 450 for calculation of the percentage. There are 3 online quizzes of ten questions each sometime between each exam. They are provided online during the weekend and are meant to be a practice for the main exams. They do not contribute towards any points for the grade. However, missing any of them is treated as unprofessional behavior. About 3 credit hours are allotted to self study and online study needed for the preparation for the small group activity in the labs and CPCs.

Number of lectures:	107
Number of labs:	48 of 2 hour duration each
Online quizzes:	3 of ten questions each

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	≥ 90%
B	≥ 80%
C	≥ 70%
F	< 70%.

Items of the outcome objectives and mission statement addressed in the course:

- 1a, 1b, 1c
- 2a, 2e, 2g, 2j, 2k, 2n
- 3b, 3c, 3d, 3e, 3g, 3h, 3i

Term 4b: Microbiology (MICR 570)

The microbiology is presented simultaneously with the Pathology course and hence they are both closely integrated with each other. Microbiology appears as a balanced combination of formal classroom instruction, practical laboratory experience and case-based exercises. The didactic portion is divided into two consecutive sections. The first of these covers the basic principles of microbiology, including classification and taxonomy, microbial physiology and genetics, genetic engineering, control of microorganisms through the use of physical and chemical agents, antibiotics, host-parasite relationships and epidemiological concepts. Bacterial, fungal and viral infectious organisms are all represented in this series.

In the second section, the pathogens are discussed according to the human organ system, where they most often cause clinical disease. Clinical vignettes are used to illustrate the epidemiology, pathogenesis, virulence properties, symptoms, laboratory diagnosis and therapy of the various agents. The presentation is coordinated with the concurrent pathology course so that the organ systems are dealt with in a fully integrated fashion. After each organ system, representative cases are presented by a practicing clinician to anchor a comprehensive understanding of the pathogenesis and disease.

Laboratory

During the laboratory sessions, the students are given problem-solving experience with pathogenic microorganism. The laboratory work includes the practical application of staining techniques, antisepsis and disinfection, and isolation of identification of infectious agents from clinical specimens along with the determination of appropriate chemotherapeutic agents. Additionally, students are given a case history along with a relevant clinical specimen, and from these they isolate and identify the microorganism, perform antibiotic sensitivity tests and report their results. Case-based instruction founded on medical vignettes of infectious disease is considered in small-group discussions several times each term. Near the end of the laboratory portion of the course, clinical conferences are presented by visiting infectious disease specialists. Computer-assisted case presentations are used throughout the laboratory portion of the course.

A student who engages in an approved research program under the supervision of the staff can gain an elective in research microbiology, and one or two academic credits per term. Registration requirements for this course are determined by the instructor. At the present time, research is being conducted in the area of antibiotic-resistant microorganisms; microorganisms in the local environment; and epidemiological studies in the bacteriology, virology and parasitology. The average amount of work required per one credit hour is based on attitude, quality of work, reliability, technique, and adherence to laboratory protocol, effort and results.

Number of credits: 5

Number of lectures: 61

Number of small group sessions: 9

No. of lectures (Didactic): 61+9(clicker sessions)

No. of labs: Depends on student's previous experience; if no experience then student does 2 x 2 hrs. "wet lab"

Interactive Group Exercises (IGE):

Clinical cases	4 points
Quiz 1 (Review Paper 1, year 2009-2010)	5 points
Quiz 2 (Review Paper 2, year 2009-2010)	5 points
Presentation Session (Chosen Original Peer Reviewed Research Article <5 years old)	6 points
Attendance & Participation via Clicker (2 sessions of 50 minutes)	6 points
Total IGE Contribution	26 points

In addition to the didactic lectures there are 9 additional sessions of student presentations of which each student must attend 2 mandatory sessions. Attendance is recorded via clicker response to questions.

Quizzes and examinations:

Quizzes:	3 clicker quizzes (5 questions each)
Midterm examination:	125 questions
Final examination:	125 questions

Distribution of points:

Quizzes	15 points
Midterm Exam	125 points
Final Exam	125 points
Clinical Cases	4 points
Presentations	6 points
Attendance & participation	6 points
Total	281 points

Calculation of letter grades:

<i>Letter grade</i>	<i>Percent</i>
A	89.6–100 %
B	79.6–89.5 %
C	69.6–79.5%
F	< 69.5%

Items of outcome objectives and mission statements addressed in this course:

- 1 a i, ii, iii; 1c
- 2 e, f, g
- 3 b, c, g, h, i

Term 4c: Communication Skills and Physical Diagnosis (CLSK 653)

This course instructs students in communication skills that they will need as medical students and physicians in order to relate to senior physicians, colleagues, patients and their families, and other health care professionals. The course prepares students for their role in addressing the common problems found in delivering health care, for example, providing health care instruction and delivering

“bad news.” Students will develop both oral and written communication skills, and learn the components of the standard history and the art of presenting cases. The physical diagnosis portion builds on the clinical skills learned in the first year of Basic Sciences. The course uses both lectures and laboratory sessions to teach physical examination skills. The laboratory groups consist of small groups of students. The techniques of physical exam are taught by videotape demonstration, live demonstration and supervised practice on fellow students.

Number of credits: 3

Number of lectures: 25

Number of labs: 28 (x2 hours)

Number of hospital rotations: --

Quizzes and examinations:

Quizzes:	4
Written examinations:	2
Lab examinations:	2 (1 lab and 1 OSCE)

Distribution of points (final grade points):

Attendance	5
Quizzes	5
Midterm written	17
Final written	26
Midterm lab	19
Final lab	28
Hospital evaluation	N/A
Small group evaluation	N/A
Case write-up	N/A
MCQ submission	N/A
Total	100

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>	<i>Points</i>
A	90%	90-100
B	80%	80-89.99
C	70%	70-79.99
F		less than 70%

Items of outcome objectives and mission statement addressed in this course:

- 1a i, ii; 1b
- 2 a, 2 b, 2 c, 2 d
- 3a, 3 b, 3 c, 3 d, 3 e, 3 f
- 3 g, 3 h, 3 i

Term 4d: MEDICAL NUTRITION (PATH693)

Medical Nutrition focuses on the relevance of nutrition in the prevention and treatment of disease. Presented in this course are those components of human pathophysiology in which diet, on the basis of current knowledge, is believed to be important in either a causative or contributory way. The application of dietary knowledge is prevention of disease and the management of established disease is discussed. Also addressed are clinical topics such as infant, maternal and geriatric nutrition; problems of obesity and related subjects; and the principles of the management of diseases such as diabetes mellitus, renal failure and atherosclerosis. This course builds on the principles that were already taught in Biochemistry, Genetics, Physiology and Pathology.

Credits: 1

Lectures: 16

Quizzes and examinations:

Quizzes: 1 (10 questions) (students awarded 2 points getting 50% or more correct)
 One final exam only: 50 questions (100 points)

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent Points</i>
A	≥ 89.5%
B	≥ 79.5%
C	≥ 69.5%
F	< 69.5

Items of outcome objectives and mission statements addressed in course:

1a iii; 1b; 1c; 1d
 2e; 2g; 2l; 2n
 3a; 3d

TERM 5

Term 5a: Pathophysiology (PATH 674)

The Pathophysiology course aims to provide a platform for active learning where the students learn to analyze a clinical problem starting with presenting symptoms and logically develop an algorithm for the analysis of signs, investigations, identification of the disease process, distinguishing from other related entities, deciding on the course of illness, principles of initial management and explaining all these on the important concepts of basic sciences learnt from the previous courses in the medical school. By presenting the course concomitantly with Pharmacology and Introduction to Clinical Medicine in an integrated fashion, the goals and objectives of the course are achieved. This integration is further achieved by the presentation of the "cases in small groups". The cases are prepared by the department faculty with the assistance of visiting professors. Students meet in small groups to discuss specific questions relative to each case.

Three online quizzes are conducted through the course. They are meant to give practice for doing questions under the exam time restriction. Each of them includes ten questions and the time allotted is 10 minutes. There are no scores for the quiz but failure to do the quiz is treated as unprofessional behavior and results in a deduction of two points from the exam total.

The course is divided into three six-week sections, with an exam at the end of each. An organ systems (cardiology, pulmonary, gastroenterology, nephrology, hematology, endocrinology, male & female genital systems, dermatology and neurology) and

interdisciplinary (clinical immunology & rheumatology, infectious diseases, psychiatry, pediatrics, sexuality, clinical nutrition, geriatrics and oncology) approach is used. Lectures are delivered by visiting professors or full-time faculty who are outstanding clinicians/ academics in their fields. These lectures present a cohesive Pathophysiology course, which is preparatory for the students' entry into the Clinical Sciences years. At the end of the course, the students are expected to be proficient in analytical skills for clinical problem solving so that they are ready for clinical clerkships.

Number of lectures: 124 hours

Number of small group sessions: 4

On-line activity: 140 hrs

Other mandatory (recordable) academic activities:

3 Online Quizzes (10 questions each)

80-100 Practice questions per week (in the form of Practice Test)

Examinations:

2 Midterm examinations 100 questions each

1 Final examination 100 questions

1 National Board of Medical Examiners-Basic science comprehensive exam

Distribution of points:

Midterm Exams 200 points

Final Exam 100 points

NBME exam 40 points

Total 340 points

Calculation of Letter Grades:

<i>Letter Grade</i>	<i>Percent</i>
A	≥ 89.5%
B	≥ 79.5%
C	≥ 69.5%
F	< 69.5%

Items of outcome objectives and mission statement addressed in this course:

1a i, ii, iii; 1b; 1c; 1d,

2e, 2f, 2g,

3b, 3c, 3d, 3e, 3g, 3h, 3i

Term 5b: Basic Sciences Foundation in Clinical Reasoning (PATH 675/676)

The main objective of the Basic Sciences Foundation in Clinical Reasoning course is to provide for small group discussions using clinical vignettes to recapitulate concepts which are felt to be clinically very important as determined by the faculty teaching in each course I the basic science years. Faculty from each of these courses will not only contribute the objectives for the sessions but will be physically present during the sessions to address any issue that may arise during the discussions. They will contribute test items for the course. This will provide for a great degree of vertical integration in the basic science years.

Number of credits: 2

Duration of course: 18 weeks

Number of small group sessions: 14 (1 per week; each of 2 hours duration)

Other mandatory (recordable) academic activities:

2 Online submissions of cases discussed in groups

Examinations:

2 Midterm examinations: 20 questions each

1 Final examination: 20 questions

13 Mini-tests: one per week having 10 modified essay questions. Highest scores obtained in 8 tests will be included in grading.

1 National Board of Medical Examiners-Basic science comprehensive exam

Distribution of Points:

Midterm Exams	100 points (40 from term exams+60 from mini-tests)
Final Exam	40 points (20 from term exam+20 from mini-tests)
NBME exam	10 points
Total	150 points

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	≥ 89.5%
B	≥ 79.5%
C	≥ 69.5%
F	< 69.5%

Items of outcome objectives and mission statement addressed in the course:

1a i, ii, iii; 1b; 1c; 1d,
 2e, 2f, 2g,
 3b, 3c, 3d, 3e, 3g, 3h, 3i

Term 5c: Introduction to Clinical Medicine (ICM) (CLSK655):

The primary learning objective of the Introduction to Clinical Medicine course is to develop one's analytic abilities in arriving at a differential diagnosis using the information obtained by a proper complete patient history together with the relative physical examinations.

This course is defined as symptom based differential diagnosis. Having obtained the presenting complaint, students must be able to determine relevant questions to ask the patient in order to further elucidate the problem(s). On completion of the history, a tentative differential diagnosis must be apparent. Based upon this, a focus physical examination is carried out.

Class Activities consist of three parts.

A. Hospital/Clinic Visits – students attend one session per week for 10 weeks and are supervised by preceptors in history taking and physical examination of patients

B. Small Group Discussions – under the guidance of tutors clinical vignettes from different body systems are discussed. These are student driven discussions carried out in the PD lab 6th Floor of Superdorm 6.

Attendance at both of the above activities is mandatory.

C. 10 lectures are given, one each week prior to each small group lab session.

Number of credits	3
Number of lectures	12
Number of labs	10 (x1.5 hours)
Number of hospital rotations	10 (x3 hours)

Quizzes and examinations:

Quizzes	0
Written examinations	2
Lab examinations	1 (OSCE)

Distribution of points (final grade points):

Attendance	5
Quizzes	N/A
Midterm written	15
Final written	24
Midterm lab	N/A
Final lab	26
Hospital evaluation	10
Small group evaluation	10
Case write-up	8
MCQ submission	2
Total points	100

Calculation of letter grades:

<i>Letter Grade</i>	<i>Percent</i>
A	90%
B	80%
C	70%
F	less than 70%

Items of outcome objectives and mission statement addressed in the course:

- 1a i, ii; 1b
- 2 a, 2 b, 2 c, 2 d, 2 e, 2 f, 2 g, 2 h
- 3 a, 3 b, 3c, 3 d, 3e, 3 f
- 3 g, 3 h, 3 i

Term 5d: Pharmacology (PHAR 681)

The primary objective of the Pharmacology course is to provide the student with a solid basis for understanding the pharmacology of therapeutic agents, and thus with a foundation for future clinical decision-making with respect to pharmacological therapies.

The course begins with a basic principles module exploring the fundamental principles of pharmacokinetics and pharmacodynamics. This is followed by systematic discussion of the major drugs used in specific clinical situations. Topics covered include the pharmacology of the autonomic and central nervous systems, cardiovascular, respiratory, gastrointestinal, renal, endocrine and autacoid pharmacology, and chemotherapy. Particular emphasis is placed on the mechanisms of action, therapeutic and adverse effects and clinical indications of drugs used in medical practice.

The lecture sequence has been coordinated with the Pathophysiology course and the schedules have been subdivided into different subject blocks to facilitate learning across disciplines.

Each lecture has well-defined learning objectives intended to help students organize their study and prepare for exams.

For advanced discussion of selected topics, the class is divided into small groups, and short clinical cases are presented and discussed by students under the guidance of a group facilitator.

Number of credits: 6

Number of lectures: 78

Number of small group sessions: 8

Examinations:

Midterm 1 Examination:	100 questions
Midterm 2 Examination:	100 questions
Final Examination:	100 questions

Distribution of points:

Midterm 1 Examination	100 points
Midterm 2 Examination	100 points
Final Examination	100 points
Attendance to Small Group Sessions	10 points
Total	310 points

Calculation of letter grades

<i>Letter Grade</i>	<i>Percent</i>
A	88–100%
B	76–87%
C	60–75%
F	< 60%

Items of outcome objectives:

- 1a i, ii, iii; 1b; 1c
- 2e, 2f, 2g, 2h, 2j, 2k, 2l, 2m, 2n
- 3b, 3c, 3d, 3e, 3g, 3i

SUMMARY OF THE BASIC SCIENCE COURSES

BASIC SCIENCES COURSE HOURS

	Course Name	Course Credits	Lectures Hours	Online Activity	Lab Hours per Session	Number of Lab Sessions	Total Lab Hours	Assessment Hours
1	Anatomy	8	80		2	28	56	6
2	Histology	4	50		2	15	30	6
3	Biochemistry	5	77		1.5	7	10.5	5
4	Bioethics	1	11		1.5	3	4.5	1.5
5	Physiology	6	87		1.5	8	12	4.66
6	Neuroscience	5	58		2 16 (buzz sessions)	10	36	4.66
7	Immunology	2	32		0	0	0	3.17
8	CPM	1	13		2	1	2	1.5
9	Parasitology	1	16		0	0	0	1.5
10	Genetics	1	16		0	0		1.5
11	Behavioral Science	6	98		1.15	7	16	5
12	Pathology	13	107	96	2	48	96	9.3
13	Microbiology	5	70		2	2	4	5.5
14	CPD	3	25		2	28	56	4
15	Medical Nutrition	1	16		0	0	0	1
16	Pathophysiology	12	124	140	2	4	8	6.25
17	BSFCR	2		52	2	14	28	1.9
18	ICM	3	12		1.5 4	10 10	15 30 (45)	4.25
19	Pharmacology	5	77		2	7	14	6

THEMES RUNNING ACROSS THE BASIC SCIENCE YEARS OF THE CURRICULUM:

- (a) **Nutrition** is spread across both the years of basic sciences. The biochemistry course teaches the biochemical basis and demonstrates the links to nutrition. The nutrition course in the fourth term emphasizes the clinical relevance of the various components of nutrition. The Pathology Course in the fourth term brings into play the important diseases linked to nutrition in the different organ systems.
- (b) A new multidisciplinary module titled "**Medicine and Society**" has been developed. It is taught through the first three terms and each subsequent segment builds on the foundation established in the previous segments. The segment in term one emphasizes Bioethics and the professional, the second term emphasizes **preventative medicine** and the third segment deals with Behavioral Sciences. Throughout these three segments, components for cultural competence will be added.

- (c) **Professionalism:** The students are exposed to this from day one when they have to attend a 2 hour workshop jointly conducted by several departments and in conjunction with faculty advisors. The matriculation ceremony is used to emphasize this quality. There is a full course on this in term 1 as mentioned in b. Besides, every course in Basic Sciences has been encourages to identify and document learning objectives related to professional behavior in their courses. A student can fail a course based on unprofessional behavior even if the exam scores reflect a passing grade. Care is taken to discuss issues on non-cognitive problems during each meeting of the Committee on academic and professional standards held at the Dean of Students Office during the middle and at the end of each term.
- (d) **Communication skills:** This is taught as a formal course under Clinical Skills in the fourth term, but is also developed through the multitude of small group sessions monitored by Clinical Tutors and professors in all the Basic Science courses and the hospital visits in terms 5 and 6. Attempts are being made to evaluate this as a distinct component at the end of each core rotation in the clinical years.
- (d) **Genetics and genomics:** There is a formal course in the second term. An attempt is being made to collect the data on various components taught through the other basic science courses.
- (e) **Clinical skills:** Is taught through specific learning objectives in each of the basic science courses in the first year, formally taught through courses in clinical skills in the second year and indirectly taught through courses like pathology, pathophysiology and BSFCR .
- (f) **Research:** The basic sciences are continually evolving because of the developments based on evidence based and translational research. The faculty makes a conscious effort to incorporate these developments in their course curriculum and inculcate the competence of life long learning in the students.

SELECTIVES

In addition to the mandatory courses in basic sciences, the students have an opportunity to participate in some other courses labeled as selectives to distinguish them from the elective rotations in the clinical years. These are offered during the down time for the students with a pass fail grade but do not count towards their GPA. The appended list gives the details of the selectives available.

SCSK	500	Prague Experience in Med.	Dr. P. Rooney	May	2*
SCSK	502	Microbiology	Dr. D. Lennon	Jan / Aug	2
SCSK	504	Int'l Hlth/Human Right - Honduras	Dr. Angela Gomez	July	1*
SCSK	505	Integ. Basic Science /Head/Neck	Dr. R. Hage	Jan / Aug	1*
SCSK	506	Complementary Medicine	Dr. J. Stanley	Jan / Aug	1*
SCSK	507	Anatomy I—Regional Anat Dissection	Dr. M. Loukas/ Dr. Yadav	Jan / Aug	2
SCSK	509	Anatomy III—Radiologic Anatomy	Dr. R. Hage	Jan / Aug	2*
SCSK	512	Anatomy IV—Gross Anat Spec Dissection	Dr. M. Loukas	Jan / Aug	2
SCSK	513	Medical Spanish	Ms. D. Johnson	Jan / Aug	1*
SCSK	514	American Sign Language	Dr. R. Hage	Jan / Aug	1*

SCSK	516	Research Ethics	Dr. C. MacPherson	January	1*
SCSK	517	International Trauma Life Support	Dr. T. McCann	Jan & Aug	1*
SCSK	518	Med Resp. to Disasters & Terrorist Event	Dr. T. McCann	Jan & Aug	1*
SCSK	519	Cardiopulmonary Life Support	Mr. A. Scott/Dr. T. McCann	Jan & Aug	1
SCSK	520	Pediatric Life Support	Mr. A. Scott/Dr. T. McCann	Jan & Aug	1*
SCSK	521	Thailand Medical Experience	M.Weitzman/Dr. T. McCann	May	1*
SCSK	522	International Spanish Experience	Ms. D. Johnson	May	2*
SCSK	523	Surgery	Dr. C. Subba Rao	Jan & Aug	1*
SCSK	524	Community Health	Dr. C. Subba Rao	Jan & Aug	1*
SCSK	525	A practical experience Trop Med Kenya	Dr. C. Macpherson	May	2*
SCSK	526	Applied Cell Biology and Histology	Dr. J. Gilloteaux	Jan & Aug	1*
SCSK	527	Applied Anat using Usound & Ner Mapper	Drs. B.Curry & D.Shanahan	Jan & Aug	1*
SCSK	528	Clinical Professionalism in Sweden	Dr. C. Cox	May	1*
SCSK	529	Bioethics Today	Dr. C. Cox	Jan & Aug	1*
SCSK	530	Forensics For First Responders	Mr. Peter Giesler	Jan / Aug	1*
SCSK	601	Bioethical Aspects of Pain	Dr. K. Yearwood	Jan / Aug	1*
SCSK	534	India Medical Experience	Dr. Bharti Bhusurmth	Jun/July	2

VENUES FOR TEACHING

BASIC SCIENCES

Grenada

There are 3 major lecture halls with a seating capacity of 400, 450 and 700 respectively and the 4th one with a capacity of 800 is being added. All of them have state of the art facilities with reclining seats, tablets that can be pulled up to place books or write notes on, sockets for plugging in laptops, wireless, 2 large screens, audiovisual room with an AV tech and excellent projections. The lectures are also recorded on mediasite program and the link provided to the students through Sonic Foundry.

There are multiple venues for labs and small group sessions. The largest is called the Keith B. Taylor Hall that can accommodate 30 tables and about 13 – 15 students around each table. Each table has a roll on addition of laptop and LCD display unit. There is a facility to do central projection on the stage using 2 screens.

The top floor of the Science Building has a similar arrangement with 18 tables and multimedia facilities. The Anatomy department has a morgue with facilities for dissection and another lab with multimedia facilities.

The Clinical Skills labs are located on the top floor of the Morris Alpert Building and consist of 22 rooms designed like hospital rooms with a bed, monitor and some with one way mirrors. There are nursing stations at either end of the central corridor. These venues are used to teaching Communication Skills, Physical Diagnosis, Introduction to Clinical Medicine and small groups in Pathophysiology and Pharmacology. In addition there is a small lab used for demonstration.

In addition there are several venues to provide for individual and group space for self study in the evenings and weekends.

Teaching facilities for the Keith B Taylor Global scholars program in Newcastle

The classes for year one are also taught at this site.

Lectures are delivered in the 228 seat lecture hall located in the Drill Hall. The lecture hall is fully equipped with sonic foundry equipment, ceiling mounted projectors, a computer and podium console, variable lighting and drop down screens. All lectures are recorded by the sonic foundry technician. The computer is loaded with turning point, power point and is able to access the internet as the lecture hall has wireless internet connectivity.

There are five small group teaching rooms each of which holds up to 50 students. The small group room teaching facilities include drop down screens, mounted projectors and are suitable for lectures and small group activities.

Laboratory facilities at the KBTGSP in Newcastle

The anatomy laboratory occupies much of the floor space on the second floor of the Drill Hall. It has state of the art door locking mechanisms which allow access only to this area by authorized personnel in accordance with the human tissue act of the UK. The laboratory is fully equipped with all of the required teaching materials for the anatomical sciences course,

CLINICAL CENTERS FOR TRAINING: US, UK

New York

The Brooklyn Hospital Center
Coney Island Hospital
Jamaica Hospital Medical Center
Long Island College Hospital
Lutheran Medical Center
Maimonides Medical Center
New York Methodist Hospital
The Queens Hospital Network, Elmhurst Hospital Center
Sound Shore Center
 Sound Shore Medical Center of Westchester
 Mt. Vernon Hospital
 Lincoln Medical and Mental Health Center
 Danbury Hospital (Connecticut)

New Jersey

Saint Barnabas Health Care System
 Saint Barnabas Medical Center
 Newark Beth Israel Medical Center
 Monmouth Medical Center
St. Joseph Hospital and Medical Center

Michigan

St. John's Hospital and Medical Center

MAJOR AFFILIATED HOSPITALS

New York

Beth Israel Medical Center
Flushing Hospital and Medical Center
Kingsbrook Jewish Medical Center
Manhattan Psychiatric Center
Metropolitan Hospital Center
Woodhull Medical and Mental Health Center

New Jersey

Atlantic Health System
 Morristown Memorial Hospital
 Overlook Hospital
Bergen Regional Medical Center
Jersey City Medical Center
St. Francis Medical Center
St. Michael's Medical Center

LIMITED AFFILIATED HOSPITALS

NEW YORK

The Brookdale University Hospital & Medical Center
Glen Cove Hospital
Southside Hospital
St. Clare's Hospital Family Practice Residency Program

NEW JERSEY

JFK Medical Center
Mountainside Hospital
Virtua—West Jersey Health System, Inc.

MARYLAND

Spring Grove Hospital Center

MICHIGAN

St. Joseph Mercy – Oakland

CALIFORNIA

Alemeda County Medical Center (Highland Campus)
Children's Hospital of Orange County
Kern Medical Center
San Joaquin General Hospital

FLORIDA

Cleveland Clinic—Florida
Miami Children's Hospital

CONNECTICUT

Norwalk Hospital

MICHIGAN

North Oakland Medical Centers

UK AFFILIATED HOSPITALS

CORE HOSPITALS IN THE UK

Norfolk & Norwich University Hospital & Norfolk & Waveney
Mental Health Partnership NHS Trust
North Middlesex University Hospital & St Ann's Hospital, London
Poole General Hospital & St Ann's Hospital, Poole
Royal Hampshire County Hospital
Russells Hall Hospital (including Psychiatry)
Staffordshire General Hospital (including Psychiatry)
Watford General Hospital (including Psychiatry)

THE NEW UK CLINICAL TRAINING CENTRES

The Greater London Clinical Training Centre
North Middlesex University Hospital
Watford General Hospital
Kent & Canterbury Hospital
Stoke Mandeville Hospital
St Ann's Hospital, London
Barnet General Hospital
The East England Clinical Training Centre
Norfolk & Norwich University Hospital
Ipswich Hospital
Norfolk & Waveney Mental Health Partnership NHS trust
The West Midlands & Yorkshire Clinical Training Centre
Staffordshire General Hospital
Princess Royal Hospital
Russells Hall Hospital
York Hospital
The Wessex Clinical Training Centre
Great Western Hospital
Poole General Hospital
Royal Hampshire Country Hospital
St Ann's Hospital, Poole

THE CLINICAL CURRICULUM (7TH THROUGH 11TH TERM)

Core Rotations	Weeks
Internal Medicine	12
Obstetrics and Gynecology	6
Pediatrics	6
Psychiatry	6
Surgery	12
Additional Requirements	
A. Medicine subinternship	4
B. Medicine elective	4
C. Pediatric subinternship or electives	4
D. Primary Care	4
<i>The primary care rotation can be based in family practice, emergency medicine, or an out-patient experience in any specialty that involves primary care</i>	
Electives	22
TOTAL:	80

B. COURSE DESCRIPTIONS OF THE CORE ROTATIONS

Short descriptions of each clerkship in the curriculum follows. More detailed descriptions of each clerkship may be found in Section Two.

Internal Medicine (twelve weeks):

The core clerkship in Medicine teaches a logical and humanistic approach to patients and their problems, starting from a presenting complaint, through a comprehensive history and physical examination, to the formulation of a problem list, assessment of the problems including a differential diagnosis, a plan for definitive diagnosis and therapy, as well as an assessment of the patient's educational, cultural and psychosocial needs.

While this sequence is applicable to all specialties in the clinical years, Medicine carries the major responsibility for teaching this clinical approach, thus forming the cornerstone of study in the clinical terms, regardless of a student's future interests.

These 12 weeks are designed to expose the student to a wide range of medical problems. In addition, the student learns how to communicate in an ethical and professional manner with patients, nurses, and other ancillary staff. Skills in processing and presenting data to preceptors, peers, and patients are assessed and refined. Extensive reading is strongly encouraged and required as part of each patient work up.

Obstetrics/Gynecology (six weeks):

This clerkship provides the student with clinical experience in a) the management of normal and pathologic changes that occur during pregnancy, labor, delivery and the puerperium; b) the diagnosis and management of gynecological disease; c) the principles and practice of family planning; d) the team concept of health care and e) public health aspects related to maternal and perinatal morbidity and mortality, sexually transmitted disease, cancer detection and education in human sexuality. Out-patient experiences are emphasized in this rotation.

Pediatrics (six weeks):

The objectives of this rotation are generally the same as those for Medicine, but here students must learn to utilize parents and other family members to provide a history in many cases. Students must also demonstrate an understanding of common pediatric problems and other important yet less common ones.

Pediatrics emphasizes the acquisition of skills in dealing with newborns, infants, children and adolescents. Normal and abnormal growth and development are stressed. Students are involved in the care of inpatients from admission to discharge and, if possible, in the follow-up clinics. Emergency department, well-baby clinic, outpatient department and intensive care units provide additional experience. Students present their patients at preceptor rounds and report on topics assigned for reading. Numerous subspecialty conferences are held on a regular schedule.

Psychiatry (six weeks):

This rotation teaches the biological, psychological, and socio-cultural basis of psychiatric disorders and the dynamics of a psychiatric diagnostic evaluation. The student also learns the psychiatric concepts, attitudes and skills that are useful to all physician-patient relationships regardless of the student's future career plans.

Experiencing direct and indirect patient contact, the student becomes able to elicit, organize and conduct diagnostic psychiatric evaluation, inclusive of a comprehensive mental status examination. The student acquires knowledge of common psychiatric disorders and their treatments, is able to formulate a differential diagnosis and a diagnostic workup with a plan of management and learns the psychiatric manifestation of systemic diseases.

Surgery (twelve weeks):

The surgical rotation exposes students to those clinical problems requiring surgical intervention as part of patient management. While observations in the operating room are an integral part of the rotation, the emphasis is not on surgical techniques but on the understanding of the pathophysiology of the surgical disease and the management of pre- and post-operative problems.

Students are exposed to patients with shock, trauma, bleeding, acute abdomen, fluid and electrolyte disturbances and other major surgical syndromes. In addition to time spent on the general surgical ward and in the operating room, students experience the surgical intensive care unit, the emergency department, the outpatient clinics and subspecialties such as anesthesiology, urology, ophthalmology, otolaryngology, orthopedics, etc.

Subinternships and required medicine and pediatric electives (twelve weeks) After students finish their core rotations, they complete an additional four weeks in a general medical subinternship, four weeks in a medicine elective and four weeks in a pediatric subinternship or a pediatric elective. All of these must be done at an affiliated hospital or clinical center. The educational goals and objectives for a subinternship are similar to those of the core clerkships but at a more advanced level and with greater responsibility.

Primary Care Rotation (four weeks):

This mandatory rotation can be based in Family Medicine, Emergency Medicine or outpatient clinics in any specialty involved in primary care. This rotation can be done out of network at any hospital with an approved ACGME residency in the appropriate specialty. Students who plan to practice in California or Texas must take four weeks of Family Medicine in a hospital having an ACGME-approved residency training program in this discipline.

The Primary Care rotation focuses on learning aspects of acute medical problems commonly seen in outpatient settings, such as respiratory, cardiovascular, gastrointestinal, psychiatric and genito-urinary illnesses, as well as hypertension, diabetes, pain management and common mild musculoskeletal injuries.

Subsets of patients seen in this setting include the clinically healthy, the socio-economically disadvantaged, the elderly, high medical utilizers, immigrants, as well as those with chronic or terminal diseases.

Electives (twenty two weeks):

Numerous and varied electives are offered at the affiliated hospitals (see Appendix A). Which electives to take depend in large measure upon the student's career choice. As a general rule, electives should be taken only after cores are completed or if arranged by the hospital. Students may take an elective prior to completing all cores but only after completion of the parent core unless arranged by the hospital. If a student exceeds the eighty week curriculum at affiliated hospitals, the student will need to pay additional tuition.

C. SUPERVISION OF THE CLERKSHIPS

SGU has a formal administrative and academic structure for conducting its clinical program at affiliated hospitals. A Director of Medical Education (DME) is on site at each clinical center and affiliated teaching hospital. The DME is a member of the SGU faculty and oversees the scheduling of rotations, delineates holidays and vacation time, administers examinations provided by SGU, determines the scope of student activities, deals with student concerns and is responsible for acute medical problems that students might develop. The DME reviews the overall program with the Dean or Associate Dean and Department Chair at the time of their visits to the hospital.

In addition to the DME, a Clerkship Director (CD) is appointed for each core clinical rotation in which St. George's students participate at each affiliated hospital. The CD is responsible administratively to the DME and academically to the appropriate departmental Chair of SGU. Five clinical departments represent the five core rotation specialties. SGU appoints a full-time Chair for each of these departments responsible for the educational content of the core rotation at all affiliated hospitals. The school also appoints Associate Chairs in the UK and elsewhere when necessary to help coordinate and supervise the educational program at all sites.

Departmental Chairs and Associate Chairs as well as DMEs, CD's and others who teach SGU School of Medicine students are appointed to the clinical faculty and are available to students for advice on managing their medical training and careers (e.g., choosing electives, specialties, and post-graduation training).

Site visits are made by administrative and academic members of the medical school to affiliated hospitals on a regular basis. The purpose of these visits is to ensure compliance with the University's standards, curriculum and policies, to review the educational program and to discuss any problems that arise on site. In addition to meetings with the students, the site visits include meetings with the DME, CD and administrative staff.

The Dean of Students and Associate Deans also have the responsibility for non-academic policies and support services for students in their clinical terms. These include problems involving finances, housing, visas and access to medical care. Along with the administrative staff at the affiliated hospitals and the Dean of Students Office, additional University personnel are available at all times through the Office of Clinical Studies to help improve the quality of life beyond the hospital environment.

D. THE ROLE OF PRECEPTORS AND CLINICAL FACULTY

The teaching cornerstone of the core rotation is the close relationship between the student and the attending physicians and/or residents who act as preceptors. Many hours per week are spent in small group discussions involving students and their clinical teachers as they make bedside rounds. Together, they discuss the patient's diagnosis, treatment and progress.

Discussion revolves around a critical review of the patient's history, physical examination findings, imaging studies and laboratory results. The preceptor evaluates the student's oral presentations, reviews the chartwork and, most of all, serves as a role model. Related basic science background, clinical skills and problem solving are woven into the discussion of the particular case. The single most important factor that determines the educational value of the core rotation is the quality and quantity of interaction between students, residents, teaching physicians and patients.

Clinical teachers are evaluated by the SGU CD, by their peers and by students on a daily basis.

The basis for student evaluation of faculty is the confidential electronic questionnaire that all students complete at the end of each clerkship. The hospital DME, St. George's University Department Chairs and St. George's University administration have access to the students responses which are all confidential.

The basis for senior faculty evaluation is the on-going process required by post-graduate accreditation agencies which includes peer review. Informal "word of mouth" local knowledge of faculty, although difficult to formalize, forms an integral part of faculty evaluation. Written reports of site visits by School of Medicine Chairs and Deans add a third level of evaluation.

In summary, the DME is responsible to assure that:

1. The faculty teaching the St. George's students is of high quality.
2. The faculty teaching the St. George's students at each hospital is evaluated appropriately.
3. Feedback to the faculty is timely.

E. THE CLINICAL CLERK

Medical students are called Clinical Clerks in their clinical years. They have entered into the hierarchy of interns, residents, fellows, attending physicians, nurses, technicians and other health care providers and should quickly learn their role in the health care team.

The essence of the clinical core rotation consists of in-depth contact with patients; students are strongly encouraged to make the most of such opportunities. Students take histories, examine the patient, propose diagnostic and therapeutic plans, record their findings, present cases to the team, perform minor procedures, attend all scheduled lectures and conferences, make work rounds and teaching rounds with their peers and teachers and should then read extensively about their patients' diseases. In surgery and gynecology, attendance in the operating room is required. In obstetrics, attendance is mandatory in prenatal and postpartum clinics; patients must be followed through labor and delivery.

A physician, nurse or other health care provider must be present in the room as a chaperone when students examine patients. This is especially true for examinations of the breasts, genitalia or rectum. If a student writes orders in the chart, the orders must be authorized and countersigned by a physician. Minor procedures may be performed on patients after adequate instruction has been given and written certification documented as permitted by hospital policy and governmental regulations. Students working in hospitals are protected by liability insurance which is carried by SGU. Students must soon become familiar with the anatomy of the patient's chart and know where to locate its individual components. Students are responsible for written patient workups but might also write daily progress notes.

Clinical clerks are expected to be on duty throughout the hospital workday, Monday through Friday. Evening, weekend, and holiday on-call schedules are the same as those for the resident team to which the student is assigned. Student duty hours are set taking into account the effects of fatigue and sleep deprivation. In general, medical students are not required to work longer hours than residents. Allowing for some modifications at different hospitals and for different cores, the average workday consists of work rounds, teaching rounds, presentation of new patients and data review in the morning, a conference at noon, and the performance of procedures, workups on newly-admitted patients and additional conferences in the afternoon. Cores with operating room experiences may be structured differently.

F. EDUCATIONAL OBJECTIVES

The clinical years of the SGU curriculum aim to transform students who have learned the Basic Sciences into students who can deal with patients and their problems in a hospital or outpatient milieu. To do this, numerous new clinical skills and considerable medical knowledge must be added to that which the student has previously acquired. The clinical years in this way prepare students for post

graduate training.

Medical knowledge is of two types – factual and conceptual. The vast amount of knowledge required and the ever accelerating rate of discovery reinforces the notion that the practicing physician must forever be a student of medicine and a continual learner. Conceptual knowledge includes the development of efficient methods for the acquisition, interpretation and recording of patient information and a systematic approach to patient care. This provides a framework on which to arrange rapidly changing and increasingly detailed medical information.

SGU is committed to a competency based curriculum. These competencies are detailed in Section Two. Those students who plan to undertake post undergraduate training in the US should prepare themselves for the ACGME Core Competencies.

The six competencies are:

- Patient Care
- Medical Knowledge
- Practice Based Learning and Improvement
- Systems Based Practice
- Professionalism
- Interpersonal Skills and Communication

We encourage students to review these competencies on the ACGME website.

G. INVOLVEMENT WITH PATIENTS

The essence of the clinical core rotation consists of in-depth contact with patients and their illnesses, supplemented by lectures, conferences, teaching rounds, and the study of case-related information sources. Students are encouraged to make the most of the opportunity to learn about, learn from and spend time with their patients.

A student soon becomes involved with a small group of patients, on the average of 2-4 per week. Indeed, the student often spends more time with the patient than does the resident or attending, establishes rapport, gains the patient's confidence and might be in the best position to advise, comfort, give solace, explain and answer the patient's questions.

Only through a detailed approach to a small number of patients can the student begin to acquire an understanding of clinical problems. In addition to the initial work-up and daily progress notes, all diagnostic and therapeutic maneuvers are closely monitored. Patients with whom the student has a major involvement are listed in the student's "Patient Logbook" (Appendix E). The faculty reviews the log in order to assess the quantity and quality of patient involvement the student has experienced. These patients form the basis of discussions with the resident and attending and for the oral examination at the end of the clerkship. They establish the major subject matter for the student's reading. If their patients require surgery, students should assist or be present in the operating room.

Although a smaller group of patients are the core of the student's educational experience, exposure to a large number of other patients on a less detailed basis is also useful in broadening knowledge. The student derives considerable benefit from exposure to other students' patients who are being discussed and by being present when attendings or consultants see their own patients.

H. READING

In the hospital, the educational process is different from the basic science classroom. Books, medical journals and on-line information replace lectures as a primary source of knowledge.

A student will not see all of the important and major disorders within a six or twelve-week core rotation. For this reason, and also to

assure a uniform background in medical studies at different affiliated hospitals, the University requires that a specific textbook be read and studied during each core rotation. The book is comprehensive of basic problems, its size matched to the length of the core and questions derived from it are included in the end-of-clerkship written examination that contributes 20% to the student's final grade.

But the required reading of a single, basic primer is not enough. An additional approach is to allow the reading to be directed by the illnesses one is treating. The chief advantage of this method is that it gives the student a story and a face with which to associate the facts about a given condition. Most students find that they retain more of their reading when they can employ a framework of personal experience. Above all, this approach emphasizes that reading is a supplement to clinical experience, not a surrogate.

Additional detailed reading about patients' problems can lead to better patient care. Comprehensive textbooks, specialty books, subspecialty books, medical journals, and on-line references help students prepare for patient presentation on teaching rounds and conferences and enhance the student's knowledge base. Increasingly, students will be required to do computer searches in order to find the latest evidence to support a diagnosis or a treatment. Such searches provide excellent sources for obtaining leads to appropriate up-to-date references. It is rather easy to get lost in these copious indices unless one knows exactly what to look for.

If students' reading selections are solely determined by their patients' problems, they are limited by the number and variety of their cases. It is therefore important that they view each case as an opportunity to read broadly and peripherally. Learning to use medical references effectively is a critical step in developing good patient care skills. It is impossible to master the totality of medical concept and fact that will be needed in patient management, particularly because medical knowledge is constantly evolving and expanding. Thus, it becomes critical to precisely define the questions regarding each patient and then find the answers to these questions in the medical literature.

Even the most recent edition of an up-to-date textbook will contain information that is two to four years old and references that are three to five years old. Finding the latest information requires the use of on-line material. A trip to the library may not be necessary. Review articles are particularly useful, as well as small pocket books that can be carried onto the wards. Required and supplementary text books are delineated in the detailed description of each core clerkship in Section 2 of this Manual.

I. LOGBOOKS

The use of logbooks is a prominent feature of the clinical curriculum. Every student must keep three of them.

The Patient Logbook, known as "the blue log," consists of a list of patients and their diagnoses that the student has studied. There is one for each of the five clinical cores, and they serve as a measure of patient mix and as a basis for the end-of-clerkship oral examination.

The Logbook of Manual Skills and Procedures is known as "the green log." It documents the manual skills and procedures that the student learns to do under appropriate supervision. (The documentation process is in accordance with New York Codes, Rules, and Regulations (NYCRR) of the Health Department, Section 405.4(h). and is relevant to all geographic sites). Procedures and manual skills may be acquired during any or many of the core clerkships.

The Surgical Subspecialty Logbook, known as "the yellow log," documents student exposure to patients in the areas of the surgical subspecialties.

All logbooks must be reviewed, signed, and photocopied. The student keeps one and sends the other to the Office of Clinical Studies. These logbooks serve many useful purposes and have contributed to the organization of the clinical curriculum and to the uniformity between various clinical campuses. Copies of the three logbooks may be found in Appendix E. Detailed instructions for their use are printed in each logbook.

J. SENIOR YEAR

This portion of the clinical program has four main goals:

1. To broaden and deepen clinical education after the core rotations
2. To continue core experience at a higher level involving more responsibility
3. To establish clinical competence within the training standards of an approved residency program in order to facilitate acceptance into a post-graduate training program
4. To choose a group of electives that best serves the academic needs of the student and is suitable for the student's career choice

Subinternships and electives to be taken at clinical centers or other affiliated hospitals with appropriately related postgraduate programs can be arranged by the Office of Clinical Studies or by the DME at any hospital.

Many electives are offered by clinical centers and affiliated hospitals; they are listed in Appendix A. As a general rule, all electives should be at least four weeks long. The student initiates the elective placement process with the hospital's DME. Family Medicine may be taken at any hospital either within or outside the SGU network; the student makes that arrangement. In clinical centers and affiliated hospitals, placement in electives is made by the DME. Elective rotations in the core specialties (i.e., internal medicine, surgery, obstetrics and gynecology, pediatrics, or psychiatry) may be taken in the US only in hospitals where there exists an ACGME-approved post-graduate training program in the specific area. In the case of training in the UK, there must exist posts at the hospital which are approved for postgraduate training by the relevant Faculty of the Royal College. In other countries, postgraduate training programs must be present for a student to do an elective.

Electives in subspecialty areas such as Cardiology or Neonatology require the presence of an approved postgraduate training program either in that subspecialty or the "parent" specialty such as Medicine or Pediatrics.

Up to twelve weeks of electives may be taken at hospitals outside the SGU network. In every instance in which a student seeks to take an elective outside the SGU network, prior written approval must be obtained from the Dean, SOM and a single elective affiliation agreement must be signed by the hospital (Appendix D). Special elective requests beyond these guidelines also require prior approval by the Dean. No credit will be granted retroactively if approval is not obtained beforehand.

Licensure requirements in the US vary from state to state and from year to year. A few states currently do not accept clinical training in hospitals that are not part of the SGU network. Accordingly, students who do not yet know where they will seek Licensure to practice medicine and who wish to be eligible anywhere should avoid electives at unaffiliated hospitals. Students who know their destination should verify the Licensure laws and regulations in this regard with the specific national or state licensing agency. Those who wish to practice medicine outside the US should verify the Licensure requirements of the relevant country.

SGU medical malpractice insurance policy covers its students in hospitals throughout the US, the UK and Canada.

K. EVALUATIONS

The evaluation of a student in a core clerkship consists of three parts – 1) clinical performance (60%) 2) oral examination (20%) and 3) written examination (20%). The teaching physicians, who work with the student during the rotation, evaluate the student's clinical performance according to three criteria, each of which is 20% of the grade: medical knowledge, clinical skills and professional attitude. These evaluations are based to a large extent on professional judgment and, for these reasons, the final grade does not always reflect a strict arithmetic average.

A mid-rotation meeting with each student is required in order to discuss the student's performance. This should include encouragement if the student is doing well or a warning with constructive criticism if the student is in danger of failing. The mid-core evaluation is formative and requires documentation on the SGU form (see Appendix F). For the final grade, the more feedback the evaluator gets

from different members of the medical staff that instructed the student, the more objective grades can be.

An oral examination at the end of the core rotation determines 20% of the final grade. It may be based upon the diagnostic entities listed in the Students Patient Logbook (blue log.) This emphasizes that students must learn from their patients and must read about their patients in detail. Students must sit the end of core written examination before starting their next rotation.

The University's written examination must be taken by students toward the end of the core rotation and determines 20% of the final grade. It is based on the contents of a required textbook which the student must read and study in its entirety before the end of the rotation. St. George's clinical chairs and teachers generate all questions in each of the five cores. While the oral exam is based on the student's clinical experience during the rotation, the written exam is not. Instead the written exam tests students' understanding of the subject as presented in a concise textbook. The hospital administers the written exam and returns it to the Office of Clinical Studies. The Office of Clinical Studies grades the exams and returns the grades to the hospital.

The student's instructor(s) must register comments about the student on the final evaluation form so that they can be entered later into the Medical Student Performance Evaluation, formerly known as the Dean's Letter. Appendix F displays the evaluation forms for the core clerkships, sub-internships and electives, and the mid-core assessment. All evaluations must be the SGU form with appropriate signature and stamp.

Electives, sub-internships, and primary care rotations are graded on a pass-fail basis. The grade is based on a student's daily performance. Credit can be given only after receipt of the student's Certificate of Completion of Elective Form (Appendix F).

A student will not be given credit for any rotation if there is an F in any of the areas. An F in any area requires a discussion between the student and the CD, DME, Departmental Chair, Dean of Students and/or the Dean.

If a student is judged to have failed a rotation because of inadequate clinical performance, that rotation must be repeated in another hospital. Such students are formally discussed at the Clinical Academic Progress Committee meeting.

If students fail the written examination, they may be given a make-up examination if the remainder of the evaluation for that rotation was satisfactory as judged by the attending physician. If they fail the oral examination, remedial work can be mandated by the Clerkship Director. Credit for a core rotation can be given only after the evaluation is received by the University and the student has passed all parts of the evaluation.

A formal mechanism exists for identifying and helping a student whose achievement is not up to standard. If preceptors or attending physicians judge a student to be marginal, the Clerkship Director is notified. The student shall be informed as early as possible during the core clerkship and given assistance and counseling. Depending upon the seriousness of the problem, the Department Chair, the DME, and the Dean may be involved.

Thus, a three-tiered system for dealing with student problems exists at all clinical sites. Initially a student's preceptor and/or clerkship director discusses a student's behavior or attitude with the student. This is done at the time of the mid-core evaluation or at any other time that is appropriate. Many times counseling the student is sufficient. If the problem recurs, a pattern develops or a single problem appears serious, the Clerkship Director notifies the DME. The DME meets with and counsels the student. If the problem is serious enough, the DME notifies the Deans' offices. The Dean of Students and the Dean of the School of Medicine have the ultimate responsibility for dealing with student's non-academic problems.

Any student who is disciplined for a non-academic problem in the Basic Science years will be reported through the Dean's offices to the DME at any hospital where the student will train. The DME at the hospital has the option of telling the Clerkship Director of the problem based on the nature and seriousness of the problem and the DME's judgment. The DME can decide based on a Clerkship Director's feedback whether subsequent Clerkship Directors should be notified.

PATTERN OF TEACHING

A hybrid model incorporating lectures and small groups in the lab setting using problem solving activities is the main stay of the teaching styles in the basic sciences years. All the basic science courses include clinical correlations in their objectives, teaching and examination. A minimum of 80% attendance is mandated in all the teaching sessions. Attention is also paid to teach, observe and evaluate professionalism particularly in the laboratory and small group activities. The clinical skills course utilizes standardized patients, peer examination as well as hospital visits for actual patient contact. Paper based clinical cases are used in all the basic science courses for small group discussions and in some courses as a part of the lectures. All the courses provide enough sample questions for self-study.

The course material is made available to the students through a web-based platform called ANGEL. This platform allows the lecture texts, lab images, notifications etc. to be posted. It also allows e-mail communications between the faculty and the students. The grade book facility on ANGEL is used for extraction of grades by the Registrar's office.

The lectures and some of the teaching lab sessions are recorded through a system called "Sonic Foundry" and the links provided to the students through ANGEL for self-study at their leisure. Many of the courses invite distinguished Visiting Professors from North America and the UK to participate in the teaching programs in Basic Sciences.

All these are ample resources available through the library services for self-study including study space, IT facilities, online subscriptions etc.

EVALUATIONS:

Individual Courses:

The main stay of the evaluations in Basic Sciences is the MCQs. Effort is made in the second year courses to incorporate many clinical vignette based MCQs on the pattern of USMLE. Each course has quizzes, midterms and finals. The small group and lab activities are evaluated for professionalism by attendance, participation and demonstration of proper attitude. Some of the courses incorporate research publications, multimedia clips etc. as a part of the evaluation. The clinical skills department also uses Objective Structured Clinical Examination (OSCE) incorporating multiple stations with standardized patients, lab investigation data, imaging studies, computer generated images etc. Communication skills are formally evaluated in the Clinical Skills course and indirectly in the small group activities of the other courses. Some courses utilize online assignments, clinicopathological correlation (CPC) sessions and concept maps for evaluation.

COMPREHENSIVE EXAMINATIONS

During the Basic Sciences years there are several comprehensive examinations. Basic Science Comprehensive Exam (BSCE) 1 and 2 are conducted at the end of years 1 and 2 respectively. The exams include test items from both internal and external sources. Both are mandatory but a pass in the latter is a requirement for the students to be promoted to the clinical years.

Objective Structured Practical Exams (OSPE) 1 and 2 are conducted at the end of term 1 and 2 respectively. These test the objectives related to the clinical skills taught through the basic science courses of the term using 20 stations, some of which are oral/viva stations. The scores in these OSPE exams contribute to a percentage of the OSCE scores in year 2 in the clinical skills course.

OSPE DESCRIPTION

Objective Structured Practical Examination (OSPE) is standardized comprehensive clinical examination that is administered at the completion of the first term (OSPE I) and second term (OSPE II) of the Basic Sciences of the School of Medicine. OSPE I and OSPE II are designed to measure students' requisite clinical skills knowledge in first term and second term of Basic Sciences respectively. The OSPE Committee sets the minimum pass levels for these examinations after a careful review of the examination's reliability and validity, and the historical examination performance data.

The OSPE exams are intended to provide an assessment of students' understanding of the clinical skill component taught in the first year of Basic Sciences. In addition, these examinations are designed to help all students evaluate their approach to taking standardized examinations and to build the test-taking skills needed for future comprehensive clinical skill examinations. The University considers the OSPEs as formative examinations and does not offer retakes. A passing score in the OSPE could be taken into a consideration for student academic progress during CAPPs meeting. In addition, the scores will contribute up to 11% to the grade for the Objective Structured Clinical Examination (OSCE) in clinical skills in year 2.

OSPE I ADMINISTRATION

Students who have completed all academic coursework in the first term, regardless of the grades received in the courses, as prescribed by the Basic Sciences schedule, are required to take the OSPE I. The examination is approximately 30 minutes long and is composed of 25 physical and clinical examination questions drawn from all Term 1 courses in proportion to the number of credit hours assigned to each course. The majority of the physical examination questions is performed on standardized patients.

Students with a valid excuse approved by the Dean of Students or a medical excuse who do not take the OSPE I as scheduled at the conclusion of Term 1 will be rescheduled for the next offering of the OSPE I (in term 2). To progress to 3rd term, students must complete OSPE I. Students currently in IAP program and who have completed all Term 1 courses must take OSPE I exam. Other IAP students who have not completed all Term 1 courses will not allowed to take this exam. Please note that, unlike regular examinations, where double time is given for students with special accommodations, OSPE examinations can not allow double time. This is consistent with OSCE examination in 2nd year. Students must adhere to the University's standardized examination policy. Students will be sequestered for this examination for couple of hours. These procedures are distributed to students prior to each OSPE I offering and available on the University's website.

OSPE II ADMINISTRATION

Students who have completed all academic coursework in the second term, regardless of the grades received in the courses, as prescribed by the Basic Sciences schedule, are required to take the OSPE II. The examination is approximately 30 minutes long, with questions drawn from all Term 2 courses in proportion to the number of credit hours assigned to each course. Students with a valid excuse approved by the Dean of Students or a medical excuse who do not take the OSPE II as scheduled at the conclusion of Term 1 will be rescheduled for the next offering of the OSPE I (in term 4). To progress to 5th term, students must complete OSPE II. Students currently in IAP program and who have completed all Term 2 courses must take OSPE II exam. Other IAP students who have not completed all Term 2 courses will not allowed to take this exam. Please note that, unlike regular examinations, where double time is given for students with special accommodations, OSPE examinations can not allow double time. This is consistent with OSCE examination in 2nd year.

Students must adhere to the University's standardized examination policy. Students will be sequestered for this examination for couple of hours. These procedures are distributed to students prior to each OSPE II offering and available on the University's website.

The students have to take the NBME Basic Science Comprehensive exam at the end of the second year as a part of the pathophysiology course requirement.

The examinations in the clinical years include direct observations of the student performance in the hospital setting by the clinical preceptors and written examinations. In addition the students have to pass the USMLE Step 1 and Step 2 (CK, CSA) as part of the requirement for graduation. Some students could alternately take the final clinical and written examinations of the school itself.

RESEARCH

Recognizing the need for research as an integral part of a university, in 2010 the School of Medicine of St. George's University has established the Medical Student Research Institute (MSRI) of St. George's University, School of Medicine to encourage, support, facilitate and centralize medical student research during the four years of the students' medical education. By offering exceptional students the opportunity to work on faculty-mentored research projects, the MSRI will:

a) advance the research arm of the medical school's mission while b) enhance the students' development and competitiveness for residencies.

This will be accomplished by offering two programs which would 1) allow students to receive the MD degree with a Distinction in Research, or 2) allow students to participate in research projects offered during basic sciences and or clinical year.

While the programs are aimed at medical students, the MSRI encourages research projects, not only with faculty members in the SOM, both in the basic and clinical sciences, but collaborative projects with faculty personnel at WINDREF and other schools within the University (SVM, SAS). Moreover, the MSRI also encourages students in the clinical years to seek involvement with researchers outside of the SGU community. The endeavors of the students in the programs would provide the necessary training in research methodology, statistical analysis, research design, medical writing and publishing.

ELIGIBILITY

Eligibility of applicants for both programs are students in the 2nd term, the 5th term, or in the 3rd year (clinical year), and the criteria for admissions are as follows:

- Minimum of 3.7 GPA (for the Research with Distinction program) and minimum 3.5 GPA for the Research Member program.
- Curriculum Vitae (include a color picture)
- Personal statement (one page explain how this program would benefit you)
- Letter of reference
- USLME I score (for 3rd year applicants)
- Interview

PROJECT IDENTIFICATION

Successful applicants must register on the MSRI website and select a mentor for the research project no later than 1 week following acceptance. The mentor must interview the student no later than a week of the mentor's selection by the student to ascertain interest and compatibility, and the student must be notified of acceptance/rejection by the mentor within 2 days of the interview. In the event

that the interview does not result in collaboration between student and mentor, the student can select another mentor.

EVALUATION

A six-month report, indicating the student's research time log and general research progress must be submitted by the mentor to the RRC as evidence of satisfactory progress. An unsatisfactory progress, if determined by the RRC, will result in a remedial plan developed by the RRC, the mentor and the student, and if satisfactory progress is not made within the next three months, the student will be dismissed from the program.

REQUIREMENTS FOR PROGRAM MAINTENANCE

All students in the programs must:

- Be in good academic standing and must maintain a minimum GPA of 3.5.
- Maintain a research log
- Make a platform/poster presentation at the Medical Student Research Day
- Comply with regulatory requirements

Failure to adhere to the above will result in dismissal from the program.

ADDITIONAL REQUIREMENT FOR DISTINCTION IN RESEARCH

In order for the award of the MD degree with Distinction in Research to be granted, apart from requirements indicated above, a minimum of two (2) manuscripts must be published or accepted for publication. The RRC will review all applicants for this award and make their recommendations to the Dean of the SOM.

FUNDING

Students are encouraged to present their research at national and international meetings and a stipend of up to \$1500 is available through the office of the Executive Dean of the SOM to cover expenses for these presentations. Funds are limited and awarded to students with outstanding projects as determined by the RRC.

FACULTY'S RESPONSIBILITY

Once a student identifies a mentor and is accepted, the mentor must submit to the RRC a two-page mentoring plan that must include the following:

- Training and research experience that the student will receive during the mentoring period to include both didactic and research components.
- How often the mentor will meet with the student, and who else, if any, may be also responsible for mentoring
- Expectations the mentor has for the student (conference attendance, other educational activities and how they would enhance the students research)
- A list of specific research resources available to the student
- Project description to include the following:
 - specific aim(s)
 - background and significance
 - research plan to include:

- study population
- study design and research methods
- sample size, including justification
- statistical analysis plan
- expected results
- potential pitfalls/alternative approaches
- timeline for project completion
- bibliography

Complied by: Dr. Shivayogi R. Bhusnurmath, Dean Academic Affairs, on behalf of and in consultation with the School of Medicine Curriculum Committee. Special acknowledgement to the Pathology secretaries for their assistance.