



**ST. GEORGE'S UNIVERSITY  
SCHOOL OF MEDICINE**

**COMPENDIUM**

**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 healthcare.

## **INTRODUCTION AND OVERVIEW**

This document presents the program leading to the MD degree and consists of three sections:

**I: Overview of the MD program,**

**II: Basic Science terms,**

**III: Clinical Training Manual.**

## **I. OVERVIEW OF THE MD PROGRAM**

The curriculum consists of 157 weeks divided into 10 terms. Students can complete the course of study and graduate in slightly less than four years, although the average is about four and one-half years. In the first five terms the students learn the basic medical sciences, as well as the fundamentals of clinical and communication skills. In the second five terms the students complete their clinical training in affiliated hospitals primarily in the US and UK. Terms 1 and 2 (the first year) take place on two campuses, one in Grenada and the other at Northumbria University in the UK. Terms 3-5 (the second year of the Basic Sciences) take place in Grenada. Terms 6-10 consist of a clerkship year which are core rotations in the major clinical disciplines at various hospital centers in the US and UK. Students then complete a final year consisting of senior clinical requirements and electives at affiliated hospitals in the US, UK, Grenada and Canada. The School of Medicine (SOM) awards the MD degree to students who have satisfactorily completed the entire program and can demonstrate the competencies in the following Outcome Objectives.

## OUTCOME OBJECTIVES

### ***A. 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, aging, 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.
- b.** Incorporate the impact of factors including aging, 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.

### ***B. Clinical Skills***

- a.** Demonstrate the ability to communicate effectively with patients, standardized patients, faculty, staff, fellow students and any other members of the health care team in classrooms, simulation labs and any clinical settings.
- b.** Obtain a comprehensive and/or focused medical history on patients, as well as standardized patients used in teaching settings of all categories.
- c.** Perform physical and mental status examinations on patients of all categories and/or patient simulators 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.** Demonstrate the ability to develop a problem list and differential diagnosis based on the history, physical findings and initial investigations and 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 for all ages regarding health problems and health 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.

### ***C. Professional Behavior***

- a. Establish rapport and exhibit compassion with colleagues, 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 healthcare 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, non-adherence and ethical dilemmas.
- g. Demonstrate a commitment to independent and life long learning including evaluating research in healthcare.
- h. Demonstrate the willingness to be an effective team member and team leader (throughout basic science years, clinical training and practice) in the delivery of health care.
- i. Recognize one's own limitations in knowledge, skills and 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.

## **COMPREHENSIVE ASSESSMENTS**

The SOM assesses students continuously as they progress through the curriculum using a variety of methods and assessment tools described in course and clerkship descriptions below. The individual courses and clerkships are responsible for this continuous assessment to ensure that students develop the Outcome Objectives above required for graduation.

### ***Medical Knowledge***

In addition to the courses and clerkships, the SOM uses six comprehensive multidisciplinary examinations to test medical knowledge through the entire curriculum. During the Basic Sciences years the SOM has incorporated the Basic Science Comprehensive Exams (BSCE) 1 and 2. BSCE 1 is a formative computer-based exam at the end of the first year. BSCE 2 is a summative computer-based exam during the second year. Both of these exams include test items taken from the NBME banks and selected by the respective course directors. These exams are administered by the NBME in collaboration with the comprehensive assessment committee of the SOM Basic Sciences. Both exams are mandatory, but a pass in the latter is a requirement for the students to be promoted to the clinical years. Students also have to pass the NBME Basic Science Comprehensive Exam at the end of their basic science training as a part of the pathophysiology course requirement. In order to train at US hospitals students must pass USMLE Step 1. In order to graduate students must either pass the NBME Clinical Comprehensive Exam or USMLE Step 2 CK.

### ***Clinical and Communication Skills***

The SOM uses a sequence of clinical and communication skills exams starting at the end of Term 1 and continuing throughout the entire curriculum, culminating in a senior graduation requirement. This sequence includes OSCEs at the end of each term (OSCE 1,2,3,4,5), the end-of-clerkship oral exams during the clerkship

year, the Final Clinical Comprehensive Exam and the USMLE Step 2 CS. The OSCEs during the first 5 terms test the objectives related to the clinical and communication skills taught through the basic science courses of the term using a total of 20 stations. The OSCEs scores contribute to a percentage of the final OSCE scores in the Clinical Skills course in term 5.

Objective Structured Clinical Examination (OSCE) is standardized comprehensive clinical examination that is administered at the completion of the first term (OSCE 1), second term (OSCE 2), third term (OSCE 3), fourth term (OSCE 4) and fifth term (OSCE 5) of the Basic Sciences of the SOM. OSCE 1-5 are designed to measure students' requisite clinical and communication skills competence in first, second and third terms of Basic Sciences respectively. The OSCE 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 OSCE exams are intended to provide an assessment of students' understanding of the clinical and communication 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 OSCEs as formative examinations and does not offer retakes. A passing score in the OSCE is taken into a consideration for student academic progress during CAPPS meeting.

The end-of clerkship oral exams are described in detail in the CTM.

The Final Clinical Competence Examination (FCCE) is a rigorous examination of clinical skills that has to be taken by all students in order to graduate. Students can be exempt from this requirement if they have passed the USMLE Step 2 CS examination. The exam is held twice a year in the UK and once a year in Grenada. The purpose of the exam is to confirm under standardized conditions that candidates have reached an appropriate level of expertise in the practice of the fundamental clinical skills required to be an effective post-graduate trainee. Students can take the exam in their last year, usually 6 months before graduation, after they have completed 42 weeks of core rotations and up to the completion of their 80 weeks training. An intensive weekend revision workshop for the FCCE is available in the Medical Education Centre at Watford one month before the UK exam.

### ***Professional Behavior***

During all courses, clerkships and electives the faculty assesses students' professional behavior by direct observation.

### ***Individual Courses***

The main stay of the assessment in Basic Sciences is the MCQs. All second year courses use clinical vignette based MCQs on the USMLE pattern. Each course contains quizzes, midterms and finals. All unified, midterm and final exams are administered online through the Examsoft software. This software allows the students to take their scheduled exams in lecture halls under supervision and submit the exams online. Examsoft is a secured software that has been introduced in SGU SOM Basic sciences courses since 2012.

During the many small group discussion sessions and lab activities, faculty assess students for professional behavior by attendance, participation and demonstration of proper attitude. Some of the courses incorporate research publications, multimedia clips etc., as a part of the assessment. 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 discussion activities of the other courses. Some courses utilize online assignments, clinicopathological correlation (CPC) sessions and concept maps for assessment.

### ***Grading***

Academic transcripts will reflect an alpha average based on the numeric grades received in each course for all

courses taken in the basic science years. The grades on the transcripts will be posted in rounded, whole numbers, but the system will hold the grade to two decimal places for the purpose of class rank and for promotions. The passing grade for each course is 70%.

In order to be promoted from one academic term to the next, students need to obtain Weighted Mean Percentage Grade (WMPG) of 75%, which will be computed by adding all the course grades as weighted by their credit hours. Students with less than a 75% average will be dismissed at the end of term 2.

Quality points are doubled in the WMPG calculations for the core clinical rotations. Core grades are determined by the following breakdown: 60% clinical performance; 20% written examination; and 20% oral examination. The required subinternships, primary care rotation, and electives are graded on a pass/fail basis.

P: Pass is only granted in a course offered on a pass/fail basis. The evaluation of students' performance in some courses is on a pass/fail basis. The criteria may include a requisite attendance record at certain parts of the course or any other activities/behaviors specifically identified in the course syllabus. The Clinical Training Manual outlines the course expectations during the clinical years.

< 70% Students whose performance does not meet the standard expected for that discipline. Students with a failing grade, or with a WMPG below 75%, are placed on academic probation, or may be dismissed from the University. A grade of less than 70% in any course with four credit hours or more can only be remedied by repeating the course. A grade of less than 70% in any clinical course requires repeating the rotation. The original failing grade and the new grade earned by repeating the course or taking a make-up exam both remain on the transcript and are both incorporated at full value into the Weighted Mean Percentage Grade. Failure to appear for an examination without an appropriately reported excuse will result in a grade of "0" for that examination. The Dean of Students or course director should be notified if catastrophic circumstances or documented illness prevents students from sitting an examination or other course requirement prior to that course requirement (See Attendance - Medical Excuse).

Percentage %	Letter Grade
96.5 - 100	A+
92.5 - 96.49	A
89.5 - 92.49	A -
86.5 - 89.49	B+
82.5 - 86.49	B
79.5 - 82.49	B-
76.5 - 79.49	C+
72.5 - 76.49	C
69.5 - 72.49	C-
1-69.42	F

## **THE BASIC SCIENCE EDUCATIONAL PROCESS**

Innovations in medical curriculum are necessary for the preparation and training of physicians to meet the dynamic changes that are occurring in the delivery of healthcare in the 21<sup>st</sup> century. The advent of new technology, complementing the explosion of medical knowledge, requires continuous review and

modifications of the curriculum that focus on the need to prepare its medical students to function in the modern healthcare system.

The curriculum emphasizes active learning by the students in a clinical context. This is achieved in the Basic Sciences terms by introducing clinical vignettes in the lectures, labs and small groups in all the courses and requiring students to conceptualize the basic science principles that constitute the backbone of the symptoms, signs, investigations and the management of patients. The SOM has developed faculty and audiovisual resources for this purpose. In addition, a cadre of over 160 clinical MD tutors with a wide range of experience supervises the small group discussion and lab activities of the students. These clinical tutors assure that every group of 10 to 12 students is intensely monitored and mentored on a daily basis in these small group discussion and lab sessions. The clinical tutors and clinical instructors help the course faculty orient their courses to ensure clinical relevance.

The students get opportunities for hands on clinical and communication skills exposure with standardized patients literally from day one because the curriculum of each of the Basic Sciences courses in year one includes this being taught and evaluated in small groups. In addition, the individual course examinations include these components ranging from clinical vignette based multiple-choice questions to examinations of standardized patients and procedures such as ultrasound. In the second year the clinical and communication experience is further augmented by supervised examination of actual patient and hospital visits.

The Curriculum Committee is charged with establishing horizontal and vertical integration during the Basic Sciences years in the construction of course objectives. Integration extends to objectives from other related courses in the small groups, facilitated by the same set of clinical tutors conducting the small groups across the different disciplines. The clinical orientation of the Basic Sciences courses establishes a strong foundation in clinical reasoning. The number of departmental faculty is also supported by a large number of distinguished Visiting Professors from North America, the UK and the Caribbean who bring 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 additionally helps the vertical integration across the four years.

Specialized teaching labs ensure active learning and individual attention for the students' development. Multimedia laboratories for the small group discussion activities used by Anatomy, Histology, Biochemistry, Bioethics, Neurosciences, Physiology, Pathology, Microbiology, Pharmacology, Pathophysiology and the Basic Sciences Foundation for Clinical Reasoning (BSFCR) courses occur weekly. The labs have over 30 study tables around each of which up to 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 is monitored by a clinical tutor. The clinical instructors and senior faculty circulate between the groups to address any contentious discussion items that develops. The group activity also provides a platform for close observation and assessment of professional behavior. In addition, a specialized clinical skills lab consists of 30 simulated hospital rooms with a central nursing station. A faculty preceptor and/or a clinical tutor in each of the rooms personally teach, monitor and evaluate the history taking and physical diagnosis skills of students. The SOM 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, assessment and archiving. It enables the faculty to pay individual attention to the students and provide clear feedback and assessment. In addition, the SOM has added a state of the art simulation laboratory that offers training for the medical students in clinical skills throughout terms 1-5.

Terms 3-5 increase the emphasis on clinical reasoning based on the Basic Sciences knowledge already acquired by the students. The assessment for the clinical reasoning and clinical skills are done in individual courses and comprehensively, using a variety of tools such as MCQs, modified essay questions, personal observations of small group discussion activity, concept maps, image/specimen/cadaver based questions etc., as detailed later in the compendium.

## II. BASIC SCIENCES TERMS

### Term 1a: HUMAN GROSS AND DEVELOPMENTAL ANATOMY (ANAT 550)

*At the end of the course, the student should be able to:*

- a. Demonstrate the ability to identify gross structures on the cadaver specimen.
- b. Demonstrate the ability to identify normal and pathological structures on Radiographs, CT scans, MRIs and other imaging modalities.
- c. Demonstrate the ability to identify normal and pathological structures with the aid of ultrasound on standardized patients
- d. Use surface anatomy to evaluate the normal functioning of structures during physical examination.
- e. Correlate the important features of the morphological changes in structures that result in the production of clinical symptoms.
- f. During this course emphasis is placed on the learning of the normal human gross and developmental anatomy. This knowledge allows the student to recognize pathologies and through previous knowledge be able to suggest possible mechanisms by which these changes evolved.
- g. Demonstrate a professional attitude in all the academic interactions
- h. Introduce communication skills, physical examination and clinical skills on standardized patients.

The emphasis of the course is not only to introduce the students to anatomical terminology and concepts but to give them an insight into how this knowledge is applicable to clinical problems encountered daily by physicians. Since it is a first term course students are encouraged to begin development of critical thinking skills through a series of well-balanced clinically oriented academic exercises. Learning outcomes are therefore linked to clinical objectives, which are extensively evaluated in all exams.

The Anatomy course is 8 credits and includes the study of Human Gross Anatomy and Embryology. This course uses a systems based approach with topics such as Back, Upper Limb, Thorax, and Abdomen being covered until the midterm examination and Pelvis, Perineum, Lower Limb and Head and Neck being covered post midterm. At the end of each topic students are provided with clinical lectures, which help with the integration of the material. During these lectures faculty members take the opportunity to focus on clinical reasoning as it applies to the anatomical problem.

In addition to lectures, this course has a laboratory component that is divided into Wet lab, Imaging lab and small group discussions. These activities take place biweekly. The material to be evaluated during these lab activities are freely accessible on the University's student website

In the Wet lab students identify prosected cadaveric specimens under the guidance of faculty. The Imaging lab is where the students have the opportunity to identify structures on Radiographs, CT scan, MRI and Angiograms. To help enhance their experience they are also given the opportunity to use ultrasound machines to locate anatomical structures under the guidance of faculty and clinical tutors on standardized



patients.

In the small group discussion sessions students participate in problem solving using group discussion. In addition, students are trained on physical examination and communication skills by examining standardized patients. The clinical tutors who are trained by the lecturing faculty carefully monitor this exercise.

To enhance the students experience two lab sessions are dedicated to the introduction of Simulated Clinical Cases using our state of the art Simulation Centre.

### ***Exams, quizzes & grades***

All the questions are linked to the stated learning objectives. These include a unified exam with other courses in the term, 12 online quizzes, 24 lab quizzes, one midterm and a final exam. The unified exam is conducted after three weeks of teaching and has 25 questions. The Midterm is conducted eight weeks into the course and includes material up the Midterm. It has 125 items each carrying one point. The written component carrying 100 points and the lab component 25 points. The final exam has an identical number of questions accounting for 125 points. Online quizzes are administered weekly and are valued at one point each. Weekly Imaging lab quizzes account for 5 points and those for the small group discussion sessions account for 1 point. Students are awarded 2 points for professionalism, the criteria for which are stipulated in the course syllabus.

Completion exam for the unified and midterm exams are typically held before the course ends, while the completion exam for the final exam is administered the week following the scheduled date for the final. There is only one offering of each of the completion exams. Failure to sit the completion exam results in an “F” grade.

<b><i>Grading</i></b>	<b><i>Points</i></b>
Unified Exam	25
Written Midterm exam	100
Written Final exam	100
Practical Midterm	25
Practical Final	25
10 Online Quizzes	10
12 Attendance points	12
12 Small Group Quizzes	12
12 Imaging Lab Quizzes	60
12 Professionalism points	12
Total:	381 points

**Number of lectures: 82**

**Number of labs: 17**

***Calculation of letter grades: Following the official SGU SOM grading policy.***

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

1 - a, b, c

2 - a,e,g, h, j, k, n

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

**Term 1 b: 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 students in small group discussion sessions 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 and communication skill exercises

<b>Number of Credits:</b>	4
<b>Number of Lectures:</b>	50
<b>Number of Small Group Discussion:</b>	15
<b>Quizzes and examinations:</b>	
Unified Quiz	25 questions
17 online quizzes	10 questions each
Midterm examination	150 questions
Final examination	150 questions

<b>Distribution of Points:</b>	
Unified Quiz	25 points
Midterm Exam	150 points
Final Exam	150 points
Online Quiz	10 points
Small Group Attendance	10 points
Total	345 points

**Calculation of letter grades: Following the official SGU SOM grading policy.**

**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 1 c: MEDICAL BIOCHEMISTRY (BCHM 550)**

The Medical Biochemistry course provides an overview of the metabolism of carbohydrates, proteins, lipids and nucleic acids. It also deals with the biochemical basis of disorders of intermediary metabolism of these macromolecules. 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. Clinical case discussions: In these sessions, clinical relevance of the biochemical and molecular processes are discussed.

Complementing the lectures are also weekly small group discussion sessions, during which groups of 7-8 students with an assigned clinical tutor discuss clinical cases with relevant biochemical and molecular processes.

<b>Number of credits:</b>	5
<b>Number of lectures:</b>	77
<b>Number of small group sessions:</b>	8
<b>Quizzes and examinations:</b>	
Unified Quiz:	25 questions
4 online quizzes:	25 questions each
Midterm examination:	100 questions
Final examination:	100 questions

<b>Distribution of points:</b>	
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 communication skills and professional behavior: 20 points

**Total:** 365 points

**Calculation of letter grades: Following the official SGU SOM grading policy.**

**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 2a: BIOETHICS AND THE PROFESSIONAL (MEDICINE IN SOCIETY I) (BIOE 501):**

This course aims to strengthen a student's ability to recognize and critically analyze bioethical concerns in medicine and public health. It provides opportunities to develop professional competencies and skills necessary to accessing credible information, formulating and expressing reasoned opinions, and managing uncertainty.

Bioethics is a discipline grounded in reason and objectivity. The course introduces students to bioethics principles, concepts, terminology, and methods with which they may address moral conflicts in medicine and public health. During lectures, group discussions, an informatics lab, electronic assignments, and readings, students apply these to patient scenarios and to controversial issues in medicine and medical research.

The course is interactive and encourages students to monitor their own professional development. It aims to motivate and equip students to reflect on their own professional competencies and duties as these evolve during different stages of their medical education.

<b>Number of credits:</b>	1
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**Number of lectures:** 11  
**Number of small group discussion sessions:** 4  
**Number of medical 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:**

4 Small Groups (SG) 12 points	3 points for participation in each group
1 Informatics Lab (Inf Lab)	3 points for participation
3 Online assignments on SAKAI	5 points in total
Subtotal	25 points (10% of final grade)
Final Exam	175 points (3 points per question 90% of final grade)
Total	200 points

**Calculation of letter grades: Following the official SGU SOM grading policy.**

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

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

**Term 2b: PHYSIOLOGY (PHYS 560)**

The aim of this course is to provide each student with a clear understanding of the basic physical concepts and principles that underlie medical physiology and pharmacology. The course has two principal components – lectures and small group discussion sessions. Lectures provide the basic science information base while the small group discussion sessions provide the student with an opportunity to assimilate and integrate the material from a purely clinical perspective within a small-group setting.

The course is divided into two sections. The first half covers cellular physiology, pharmacology, autonomic function, muscle physiology and cardiovascular physiology. The second half covers gastrointestinal, renal, pulmonary, endocrine and reproductive physiology. Appropriate clinical perspectives are presented throughout the course in didactic lecture and again emphasized and expanded upon in small groups.

The small group discussion sessions consist of 2 laboratories, 5 Clinical case discussions and a pharmacology workshop. Each session includes a team based learning period where the information is assessed with an online quiz that requires group discussion.

**Laboratory**

Two human laboratory exercises pertaining to cardiovascular and respiratory physiology are included in the course. One laboratory requires the use of a personal diagnosis kit and training in the clinical skills associated with blood pressure and pulse measurement. The other laboratory uses a special suite of software to present a pulmonary case with patient videos and is accompanied by access to patient notes, Radiographs, MRI, blood work and history. For each of the laboratories, students work in groups of 6 and each group is assisted by a clinical tutor.

**Clinical Case Studies**

Six clinical case studies pertaining to autonomic and muscle physiology, cardiovascular, gastrointestinal, integrated thoracic physiology, and 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 up to 6 students each facilitated by a clinical tutor.

### ***Team-Based Learning***

At the end of each small group discussion session the students log onto the course website and participate in a randomized quiz. They then work as a group to complete the quiz for that session. The questions are randomized for each student so that discussion of the different factors is fostered in the group.

<b><i>Number of credits:</i></b>	6
<b><i>Number of lectures:</i></b>	88
<b><i>Number of small group sessions:</i></b>	8
<b><i>Quizzes and examinations:</i></b>	
Midterm examination:	86 questions
Final examination	86 questions
Graded Quiz	8

### ***Distribution of Points:***

Midterm Exam	86 points
Final Exam	86 points
Small Group Participation	8 points
Professionalism	4 points
Total	184 points

***Calculation of letter grades: Following the official SGU SOM grading policy.***

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

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

## **Term 2c: 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 discussion 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 discussion group, assisted by a clinical tutor, 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
Small Group Practical Sessions	20 hours (10 x 2)
Buzz Group Discussions	16 hours

### ***Distribution of Points:***

A total of 185 assessment points can be earned in the course, as listed in the table below:

<b>Assessments:</b>	<b>Points:</b>
SG Assessments (SG01 to SG05)	5
Assessment of Professionalism 1	2
Midterm Examination	80
SG Assessments (SG06 to SG09)	4
SG Practical Examination (SG10)	2
Assessment of Professionalism 2	2
Final Examination	90
<b>Assessment Points Total:</b>	<b>185</b>

***Calculation of letter grades: Following the official SGU SOM grading policy.***

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

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

### **Term 2d: MEDICAL IMMUNOLOGY MEDICAL GENETICS (BMIC 550)**

Medical Immunology Medical Genetics (MIMG) is a four-credit interdepartmental course newly constituted by merging two previously existing medical courses at SGUSOM. Given the interdepartmental nature of MIMG it is listed as a distinct course within the Microbiology Department as well as being listed as a distinct course within the Biochemistry Department.

The Medical Immunology component of MIMG has been developed to interdigitate with allied disciplines that are also offered during the student's program of study. In particular, every attempt is made to ensure horizontal integration with Genetics and vertical integration with Parasitology and Microbiology, which in turn, are integrated with Pathology through to Pathophysiology. The nature of Immunology demands that discipline-specific vocabulary be memorized before concepts may be understood and assimilated. A strong foundation is necessary to grasp the principles underlying clinical trials, clinical cases, diagnostic tests, and progressing

immunological research. In addition to the aforementioned integration, the Immunology course emphasizes the manner by which basic science research translates into clinical practice. This is achieved by the incorporation of Translational Immunology, Immunodiagnostics, and Clinical Cases.

The Immunology course has been organized and structured with the aim of fulfilling the Liaison Committee on Medical Education mandate that “The educational program must include instructional opportunities for active learning and independent study to foster the skills necessary for lifelong learning. To this end, active learning techniques dominate in most lecture hall sessions. As well, a reading assignment based on the current literature is required.

To ensure fairness, the Immunology component of MIMG will contribute 50% of the final overall grade that appears on the official transcript, irrespective of the number of points earned in either the Medical Genetics module or the Medical Immunology module. All course materials are available on the university website.

**Number of credits:** 4  
**Number of lectures:** 32  
**Number of small group sessions:** during clinical lectures in lecture hall

***Quizzes and examinations:***

Sakai quizzes 8 points  
Professionalism 2 points  
Midterm examination (100 questions) 50 points  
Final examination: (70 questions) 70 points

***Distribution of points:***

Sakai Quizzes and Professionalism 10 points  
Midterm Exam 50 points  
Final Exam 70 points  
Total 130 points

***Calculation of letter grades: Following the official SGU SOM grading policy.***

***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 2e: 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 14 seminar-style lectures and one small group discussion 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 Discussion Workshop: Needle Stick Injury Prevention Workshop***

- Prevention of Needle stick injuries and Blood borne Pathogens
- Provides information on these occupational Hazards and how they can be avoided.

***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.

<b><i>Number of credits:</i></b>	1
<b><i>Number of lectures:</i></b>	14
<b><i>Number of small group sessions:</i></b>	1 (Interactive Workshop, 2 hours)
<b><i>Quizzes and examinations:</i></b>	Final examination: 50 Questions

***Distribution of Points:***

Final Examination	100 points
Total	100 points

***Calculation of letter grades: Following the official SGU SOM grading policy.***

***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 3a: BEHAVIORAL SCIENCES AND MEDICINE (BEHS 640)**

This broad, 6 credit hour course aims to contribute meaningfully to the education of students 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:**

This module 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 assessment 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 on a biopsychosocial approach to patient care. Special attention is given to the crucial role of cultural factors within the doctor-patient encounter and the healthcare 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 reviews fundamental topics that quantify variation and uncertainty experienced within the science of medicine. Clinical epidemiology covers 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 strategies 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 healthcare are explored. Current issues of healthcare 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 Discussion Activities:**

Small group discussion 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. The faculty of the department of Behavioral Sciences Department leads these sessions, 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-5 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

<b>Number of credits:</b>	6
<b>Number of lectures:</b>	94 hours
<b>Number of small group sessions:</b>	7
<b>Quizzes and Examinations:</b>	Online not-for-credit quizzes for each lecturer (15 quizzes; ≈ 25 questions each)
<b>Midterm Examination:</b>	120 questions
<b>Final Examination:</b>	120 questions

**Distribution of Points:**

Midterm Exam	120 points
Final Exam	120 points
Small Group Professionalism	3 points
Total	240 points

**Calculation of letter grades: Following the official SGU SOM grading policy.**

**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 a: PATHOLOGY (PATH 640)**

**PATHOLOGY COURSE GOALS AND OBJECTIVES**

At the end of the course, the student should be able to:

- **demonstrate the ability to identify and explain the etiology, pathogenesis, gross and microscopic appearances, relevant laboratory investigations, complications and the usual outcome of common diseases (listed in the objectives)**
- **correlate the important clinical features of the disease with the pathologic changes.** *(This knowledge of Pathology should result in appropriate diagnostic approach, selection and interpretation of appropriate investigations and selection of the broad approaches to treatment. The concept of images, locations, and chronology of the evolution of lesions should help the student to correlate clinical observations in clinical practice).*
- **demonstrate a professional attitude in all the academic interactions**

The emphasis of the course is to provide a platform for the “learning experience” by active participation of the

students. It is **not** designed to simply deliver a “package” of information to the students. It is the student’s responsibility to actively participate in the “learning experience” and to learn from it rather than memorize the information. (*We open the gate, you enter it!*). The course is “patient centered” and hence the learning outcomes are all linked to objectives that are patient-related. The learning and examinations are integrative and not compartmentalized. The students will have a further opportunity to recapitulate and clinically integrate the subject matter in the Pathophysiology Course.

The Pathology course is 13 credits and includes - 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 10-12 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 Course website and are freely accessible to students. Periodically, gross specimens and glass slides from current hospital material may be discussed. The discussions are closely monitored by the faculty and each student is evaluated on a daily basis.

The first segment deals with general pathology how tissues respond 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, and followed up with diseases of the cardiovascular and respiratory systems.

The second segment involves similar principles, but applied in detail to individual organ systems like gastrointestinal, renal, etc. It will also include interpretation of laboratory data for some of the major disease processes. Short modules on forensic pathology and pediatric pathology are taught along with Systemic Pathology. Students also discuss several clinicopathological conferences (CPCs), including difficult case seminars.

Students are mandated to draw concept maps (to encourage and develop conceptual learning as against linear memorization) each week and submit them for assessment. A total of 330 test items are administered through unified exam, midterm, quiz and final exam, including 70 based on images. All of the questions are clinical problem-solving MCQs.

### ***Laboratory (Taylor Hall)***

The lab sessions are conducted as small group discussion session in student groups of 10 – 12 monitored by a clinical tutor. The clinical tutors are prepared for these sessions by extensive preview sessions by the Professors. 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. The students have to independently study the images, clinical cases and CPCs and post their observation and discussions on their group website which is monitored and evaluated. They are also made to present these in the groups for discussions monitored by the clinical tutors.

### ***Exams, quizzes & grades***

All the questions are linked to the stated learning objectives. These include a unified exam with other courses in the term, one midterm, one quiz and a final exam. The unified exam is conducted after two weeks of teaching and contains 20 questions. It counts for ten points towards the final score. The midterm is conducted six weeks into the course and includes material from general pathology and two organ systems. It contains 150 test items (including 35 images) each carrying one point. The final exam has similar number of questions counting for 150 points. There is an online quiz on the weekend midway through the second part of the course. It contains 10 questions. The quiz does not carry any points but missing it will result in deduction of two points from the final score. Each question in all the exams and the quiz will be for 75 seconds. Professional points added as follows: getting 50% or more correct responses to clicker questions through the course – 15 pts; attendance and participation in labs and lectures – 15 pts; CPC 2 pts each for 5 cases – 10 pts; Concept Maps – 10: A total of 50 professional points.

Completion exam for the Unified and Midterm Exams is held before the course ends while the completion exam for the Final Exam is administered during the week following the scheduled date for the final. There is only one offering each of completion exams. Those who have missed it will get a score of zero.

With the rapidly expanding volume of medical information and the limited time, it is **impossible** to teach everything about pathology in this course, however, we have selected common, important and prototype diseases to lay the foundation.

***The final score tally is as follows:***

Unified:	10
Midterm:	140
Final:	150
Professional Points:	25 (CPC 5, Concept Maps 10, Lab and Lecture Attendance, Professional Behavior 10 points)
<i>Total:</i>	325 Points

***Number of lectures:*** 107

***Number of labs:*** 48 of 2 hour duration each

***Online quizzes:*** 2 of 10 questions

About 3 credits equivalent is allotted to independent learning using pathology images and clinical cases with built in questions. It is closely monitored and evaluated by the postings by individual students on the course website and their presentations and discussions in the lab groups.

***Calculation of letter grades: Following the official SGU SOM grading policy.***

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

1 - a, b, c

2 - a,e,g, h, j, k, n

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

**Term 4b: MICROBIOLOGY (MICR 670)**

The course is designed to focus the student on the clinical presentation of infectious disease, while encompassing the pathogenesis of the causative agent. The learning and examinations are integrative and not compartmentalized. The students will have a further opportunity to recapitulate and clinically integrate the subject matter in the Pathophysiology Course.

The Microbiology course is 6 credits and is comprised of 40% introductory material addressing the bacterial, viral, fungal, protozoa and helminthes organisms and the remaining 60% is delivered in an organ system framework. The main emphasis of the course is microbial infections within each of the human organ systems with special emphasis on clinical correlates presenting the range of infectious agents. In addition, self-directed life-long learning exercises have been created to demonstrate 1) the need for continued learning and understanding of advances in knowledge and changes in medical practice, 2) the rapidity of the advancing body of medical microbiology knowledge, 3) limitations in the existing knowledge base and needs for areas of advancement. Our course materials include color annotatable slides, supplemental course notes, practice questions, a discussion forum and recorded lectures. Along with additional current research and review articles, other supportive materials are all on the course management system and are accessible by each student. The discussion forum is closely monitored by the faculty on a daily basis. Supplemental instruction for students experiencing academic difficulty is provided by a clinical instructor from within the department.

The introductory material covers areas of microbial structure/function/characteristics, replication, pathogenesis and control of the microbial populations.

The organ system material includes the major aspects of infectious disease for each microbe we describe, epidemiology, clinical manifestations, microbial characteristics and pathogenesis. We also cover diagnosis and prevention, touching on treatment (although treatment modalities are taught in the Pharmacology course). At the conclusion of each organ system, clinical cases are presented in the small group sessions to emphasize the integration of basic science knowledge with clinical medicine.

In an effort towards upward, vertical integration, a prominent infectious disease specialist conducts an infectious disease section, which prepare the students for the transition into Pathophysiology (taught in 5<sup>th</sup> term), clinical rotations and practice.

### ***Laboratory***

The microbiology wet lab sessions are conducted as individual/group activities overseen by the departmental faculty. Laboratory exercises are provided for those students indicating an interest and cover the basics of the handling infectious material, isolation of infectious agents, staining procedures.

### ***Small Group Discussion Sessions***

These are conducted by departmental clinical tutors to engage critical thinking and reasoning to enable application of the basic science information presented in the course in a clinical manner. Students are placed in groups of 8-9 members, discussing 3-4 clinical vignettes, emphasizing the integration of basic science knowledge with clinical medicine.

### ***Exams, quizzes & grades***

All the questions are linked to the stated learning objectives. These include a unified exam with other courses in the term, one midterm, three quizzes and a final exam. The unified exam is conducted after three weeks of teaching and has 24 questions, covering the introductory material. It counts for approximately 8% of the final grade. The midterm is conducted midway through the course and covers both introductory material and some organ systems. It contains 125 test items (including images) each carrying one point. The final exam is not comprehensive and covers the remaining organ systems. It also contains 125 questions. Each midterm and final examination is comprised of 30% newly written examination questions along with 70% examination questions

for which the statistics are recognized, in order to maintain reproducibility and consistency of examinations. More than 40% of the examination questions are presented as clinical vignettes.

Completion exams are given 1 week after the administration of the regular scheduled examination.

With the rapidly expanding volume of medical information and the limited time, it is **impossible** to teach everything about microbiology in this course, however, we have selected common, important and prototype diseases to lay the foundation. To this end we have provided additional depth, scope and background on relevant topics in medical microbiology via the use of the research and review articles used for the quizzes.

<b>Number of credits:</b>	6
<b>Number of lectures:</b>	75
<b>Number of small group sessions:</b>	6
<b>No. of lectures (Didactic):</b>	75 + 3 Quizzes + 2 Question Sessions
<b>No. of labs:</b>	Depends on student's previous experience; if no experience then student does 2 x 2hrs "wet lab"

***Quizzes and examinations:***

Unified Examination	22 questions
3 quizzes	5 questions each, best 2/3 quizzes are counted to final grade
Midterm examination:	125 questions
Final examination:	125 questions

***Distribution of points:***

Unified Exam	24 points
Quizzes	10 points
Midterm Exam	125 points
Final Exam	125 points
Small Group Sessions	30 points
TOTAL	312 points

***Calculation of letter grades: Following the official SGU SOM grading policy.***

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

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

**Term 4c: COMMUNICATION SKILLS AND PHYSICAL DIAGNOSIS (CLSK 653)**

This course instructs students in the communication and interpersonal skills that they will need as medical students and physicians in order to relate to senior physicians, colleagues, patients and their families, and other healthcare professionals. The course prepares students for their role in addressing the common problems found in delivering health care, for example, providing healthcare instruction and delivering "bad news". Patient centered interviews form the corner stone of the communication and interpersonal skills taught in the small group sessions with the participation of standardized patients. Communicating with patients in an empathetic manner is emphasized, together with patient education and counseling in reference to their illness and lifestyle changes where required. Students will develop both oral and written communication skills, and learn the components of the standard history and the art of presenting cases. The distinction between the complete history and the focused history is explained. History taking contributes the most towards making a diagnosis, therefore communication and interpersonal skills are taught throughout the semester. The physical

diagnosis portion builds on the clinical skills learned in the first year of Basic Sciences and emphasizes core competency in physical skills rather than an exhaustive list of skills many of which the average clinician never uses. 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 live demonstration and supervised practice on standardized patients and fellow students, as well as online recordings.

### ***Objectives of Communication Skills***

At the end of the course the student will be able to:

- Demonstrates tasks necessary for effective and efficient medical encounter
- Demonstrate the modalities used in skilled interviewing
- Demonstrate an understanding of the meaning and rationale of patient centered medicine.
- Demonstrate sensitivity to the patient's perspective
- Demonstrate sensitivity to cultural, personal and religious factors of patient
- Demonstrate proficiency in using a number of different skills and strategies
- Demonstrate **self-awareness** and the capacity for critical self-reflection
- Deliver effective patient education: – patient illness, coping strategies, patients' rights.
- Demonstrate the ability to influence patients by counseling into behavioral changes
- Demonstrate the importance of confidentiality when obtaining a health history

### ***Objectives of History Taking***

At the end of the course the student will be able to:

- Describe the techniques of history taking
- Describe the structure and purpose of a health history
- Describe how to obtain a comprehensive health history.

### ***Patient assessment – techniques of physical examination***

At the end of the course the student should be able to:

- Perform a complete or problem-oriented physical examination on a patient of either sex and any age or condition
- Gain the patient's confidence and provide reassurance about the examination.
- Utilize correctly the various instruments of the physical examination
- Evaluate the importance of a general survey of the human body as a whole unit.
- Recognize the physical findings in all systems that are normal for the patient's age and sex.
- Define and describe the techniques of inspection, palpation, percussion and auscultation.
- Demonstrate the different techniques utilized in the examination of the different systems

<b><i>Number of credits:</i></b>	3
<b><i>Number of lectures:</i></b>	29
<b><i>Number of labs:</i></b>	62 (x 4 hours) and 7 (x 8 hours – OSCE)
<b><i>Quizzes:</i></b>	4 (Including Unified Quiz)
<b><i>Written examinations:</i></b>	2
<b><i>Lab examinations:</i></b>	1 (OSCE)

### ***Distribution of points (final grade points):***

Attendance	5
Quizzes	5
Professionalism	5
Midterm written	15
Final written	28

Final lab	42
Total	100

**Calculation of letter grades: Following the official SGU SOM grading policy.**

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

- 1ai, aii, aiii, 1b, 1c, 1d, 1e
- 2a to 2n (2°, 2b, 2c, 2d, 2e, 2f, 2g, 2h, 2i, 2j, 2k, 2l, 2m, 2n)
- 3a to 3i (3,a,3b,3c,3d,3e,3f,3g,3h,3i)

### **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 SOM. 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 department faculty prepares the cases with the assistance of visiting professors. Students meet in small groups to discuss specific questions relative to each case, under the supervision of faculty and clinical tutors.

Three online quizzes are conducted through the course. 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 professional 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. Full-time faculty or visiting professors that are outstanding clinicians/academicians in their fields delivers lectures. 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



Professional behavior & Communication skill points	15 points
Total	355 points

**Calculation of letter grades: Following the official SGU SOM grading policy.**

**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 FOR CLINICAL REASONING (PATH 676)**

The main objective of the Basic Sciences Foundation for Clinical Reasoning course is to provide for small group discussions using clinical vignettes to recapitulate concepts, which are clinically very common. Faculty from each of these courses will not only contribute the objectives for the sessions but will be physically present during the lab 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.

<b>Number of credits:</b>	2
<b>Duration of course:</b>	18 weeks
<b>Number of small group sessions:</b>	14 (1 per week; each of 2 hours duration)
<b>Other mandatory (recordable) academic activities:</b>	2 Online submissions of cases

**Examinations:**

2 Midterm examinations: 20 questions each  
1 Final examination: 20 questions  
1 National Board of Medical Examiners-Basic science comprehensive exam  
13 Weekly-tests: one per week having 10 modified essay questions. Highest scores obtained in 8 tests will be included in grading.

**Distribution of Points:**

Midterm Exams	100 points (40 from term exams+60 from Weekly-tests)
Final Exam	40 points (20 from term exam+20 from Weekly-tests)
NBME exam	10 points
Professional behavior & Communication skill points	10 points
TOTAL	160 points

**Calculation of letter grades: Following the official SGU SOM grading policy.**

**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 relevant 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 four 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. Teaching is by preceptors (physicians in active practice). At the end of each day, students are required to prepare SOAP notes on each patient seen. These notes are similar to those required in USMLE CS examination.

B. Home Study Assignment – A synopsis of a clinical case is posted every week on SAKAI. Students will be required to write 3-5 possible differential diagnoses, list two additional findings that may be present for each diagnosis and two findings that will disqualify consideration of each diagnosis.

C. Small Group Discussions – under the guidance of clinical tutors clinical vignettes, representing case histories, from different organ systems are discussed. These are student driven discussions carried out in the PD lab 6<sup>th</sup> Floor of Morris Alpert Hall (Superdome 6) and ground floor of St. George's Hall. In these sessions, a tutor initially functions as a standardized patient using the information of the clinical vignette. A student will interview the tutor to obtain the relevant clinical data. This method ensures that students continue to receive mentoring in communication and interpersonal skills in ICM, thus refreshing the skills learned in the CPD course. On completion of the data gathering, the possible physical findings applicable to the clinical vignette are discussed.

Attendance at both the Hospital/Clinic and Small Group activities is mandatory.

D. Ten lectures are given, one each week prior to each small group lab session.

#### Small Group Discussion Sessions

Problem solving is taught, using clinical vignettes, by full time clinical tutors. These sessions are student driven discussions and the topics involve a different organ system each week. Prior to the lab, a vignette related to the topic for discussion is sent to all students in term 5 via SAKAI. Students are supposed to, as a home study program, develop a list of differentials. On the day of the lab, a tutor will function as a patient and he/she will be interviewed by a student to obtain the relevant data and to illustrate the use of communication and interpersonal skills. On completion, feedback is provided by the standardized patient, tutor and fellow students. A list of differentials is developed by the students with the tutor as facilitator. The student will then discuss the possible physical findings based upon the differentials. The session on data gathering ends with the tutor informing the students as to the findings as per script. After the diagnosis, the students practice writing patient's notes using the format of the CS exams. All students are required to participate and drive the discussions forward.

#### **Hospital section**



	total 14
Examination/Student evaluation	Written-3.4; OSCE 1.25 each student (to be increased the upcoming semester) total 40
<b>Total</b>	69.9 each student; 268.4 total points

***Calculation of letter grades: Following the official SGU SOM grading policy.***

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

1ai, aii, aiii, 1b, 1c, 1d, 1e

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

3a to 3i (3a, 3b, 3c, 3d, 3e, 3f, 3g, 3h, 3i)

### **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 autacid 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, high-yield clinical cases are presented and discussed by students under the guidance of a clinical tutor. The small group discussion sessions are designed to provide a clinical context to help students apply acquired knowledge and explore new knowledge, as well as to integrate Pharmacology with Clinical Medicine and Pathophysiology.

There are three written examinations: Midterm 1, Midterm 2 and Final. The examinations consist of 100 USMLE-style multiple choice questions and are two hours in length. Exam questions aim to test the application of students' knowledge in a clinical context. Each examination is designed to cover the material taught in the preceding segment of the course; however, pharmacology is an integrated discipline and many topics are, by necessity, interconnected. It is expected that at the end of the course the student will have a comprehensive and integrated understanding of the material.

***Number of credits:*** 6

***Number of lectures:*** 79

***Number of small group sessions:*** 8

***Distribution of points:***

Midterm 1 Examination	100 points
Midterm 2 Examination	100 points
Final Examination	100 points
Small Group Discussion Sessions	28 points
Total	328 points

***Calculation of letter grades: Following the official SGU SOM grading policy.***

***Outcome objectives covered in the course:***

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

## SUMMARY OF THE BASIC SCIENCE COURSES

### *Basic Sciences Course Hours*

	<b>Course Name</b>	<b>Course Credits</b>	<b>Lectures Hrs.</b>	<b>Online Activity</b>	<b>Lab Hrs per Session</b>	<b>No. of Lab Sessions</b>	<b>Total Lab Hrs.</b>	<b>Assessment Hrs.</b>
1	<b>Anatomy</b>	8	82		2	28	56	6
2	<b>Histology</b>	4	50		2	15	30	6
3	<b>Biochemistry</b>	5	77		1.5	8	10.5	5
4	<b>Bioethics</b>	1	11		1.5	3	4.5	1.5
5	<b>Physiology</b>	6	88		1.5	8	12	4.66
6	<b>Neuroscience</b>	5	58		2	10		
	<b>Medical Immunology &amp;</b>				16 (buzz sessions)		36	4.66
7	<b>Genetics</b>	4	32		0	0	0	3.17
8	<b>CPM</b>	1	14		2	1	2	1.5
9	<b>Behavioral Sc.</b>	6	94		1.15	5	16	5
10	<b>Pathology</b>	13	107	96	2	48	96	9.3
11	<b>Microbiology</b>	5	69		2	2	4	5.5
12	<b>CPD</b>	3	29		2	30	60	4
13	<b>Medical Nutrition</b>	1	16		0	0	0	1
14	<b>Pathophysiology</b>	12	124	140	2	4	8	6.25
15	<b>BSFCR</b>	2		52	2	14	28	1.9
					2.5			
16	<b>ICM</b>	3	13		1.5	10 hospital rotation 12 small groups	43	4.25
17	<b>Pharmacology</b>	6	79		1.2	8	9.6	7.2

## THEMES THROUGH THE BASIC SCIENCE 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.

(This is not really a theme, at least not yet, unless you can demonstrate it through at least a few courses and terms).

## THEMES THROUGH THE MD PROGRAM

- (a) **Communication skills:** Starting in the first year and continuing through the basic science terms, communication and interpersonal skills are required for successful performance in the OSCEs. Communication skills are taught as a formal course in the Clinical Skills sequences in the fourth and fifth terms and 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. These are also evaluated as a distinct component at the end of each core rotation in the clinical years.
- (b) **Research:** The Basic Sciences are continually evolving following the developments on evidence based medicine 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. Throughout the medical curriculum, faculty emphasize the crucial role of research in medicine.
- (c) **Ethics:** The formal teaching of ethics begins in the Bioethics course in term 2. All clerkships include ethics in their educational objective. Students are continuously exposed to ethical issues informally during their rotations. Finally, the school requires the completion of a web-based course for all students as a graduation requirement.
- (d) **Pain Management:** Students learn the basic science principles and pharmacological management of pain in physiology, neurosciences and pharmacology. Clinical problems dealing with pain management is an integral part of clinical rotations. Finally, students must complete a web-based course on pain management as a graduation requirement.
- (e) **Geriatrics:** In the basic science years students learn about aging and the life cycle starting in histology and continuing through physiology, neurosciences, pathology, behavioral sciences, pharmacology, pathophysiology and clinical skills and continues in the clinical years. The departments of internal medicine, psychiatry, family medicine and emergency medicine take the major responsibility for teaching students about the problems of the elderly. In addition, the school has developed a web-based course on geriatrics which continues throughout the MD program and is a graduation requirement.

## 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 selective 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. R. George	Jan / Aug	2
SCSK	509	Anatomy III - Radiologic Anatomy	Dr. R. Hage	Jan / Aug	2*
SCSK	512	Anatomy IV - Gross Anat Spec Dissection	Dr. R. George	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	Mr. M. Weitzman/Dr. Weitzman	May	1*
SCSK	522	International Spanish Experience	Ms. D. Johnson	May	2*
SCSK	523	Surgery	Dr. C. Subbarao	Jan Aug	& 1*
SCSK	524	Community Health	Dr. C. Subbarao	Jan Aug	& 1*
SCSK	525	A practical experience Trop Med Kenya	Dr. C. Macpherson	May	2*
SCSK	526	Applied Cell Biology and History	Dr. J. Gilloteaux	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*



## VENUES FOR TEACHING

### ***Grenada***

There are 4 major lecture halls with a seating capacity of 400, 450, 700 and 800 respectively. 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 is 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 28 tables and multimedia facilities.

The Department of Anatomical Sciences has an Anatomy Laboratory with facilities for dissection, micro surgical dissection, endoscopy, ultrasound, and multimedia.

The Clinical Skills labs are located on the top floor of the Morris Alpert Building and consist of 30 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. Furthermore, there are several venues to provide for individual and group space for self study in the evenings and weekends.

### ***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.

## PATTERN OF TEACHING

A hybrid model incorporating lectures and small groups discussion sessions 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 discussion activities. The Anatomy, Histology and Clinical skills courses are utilizing standardized patients. In addition, Clinical Skills is using hospital visits for actual patient contact. Paper and Digital 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 SAKAI. 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 SAKAI 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 SAKAI 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.

## **RESEARCH**

Recognizing the need for research as an integral part of a university, in 2010 the SOM of St. George's University has established the Medical Student Research Institute (MSRI) of St. George's University, SOM 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 SOM'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.

### ***G. The Medical Student Research Institute***

SGUSOM has invested extensively in developing a novel web-based Medical Student Research Institute (MSRI). This is part of our mission to establish research as an integral component of the MD program. The MSRI grew out of our conviction that research is necessary for progress in the understanding of health and disease and for improving patient care. The MSRI provides an opportunity for exceptional students to spend part of their SOM experience involved in basic, clinical, translational or social science

research under expert faculty mentorship. Students have the opportunity to conduct research within the specialties that interest them with expectations that this will shape their career goals and help build an academic track record that will be viewed favorably by competitive residency programs.

***The MSRI offers two tracks for students:***

▪ ***Distinction in Research***

This track is available to students in terms 2 through 5 with a WMPG of 85% or greater. The select group of students accepted into this program will be involved in research throughout SOM and have the opportunity to graduate with “MD with Distinction in Research” by maintaining a GPA of 3.5 or higher and publish two papers in peer reviewed journals at the time of graduation. In addition students can enroll during their 3<sup>rd</sup> year with a GPA of 3.5 or greater.

▪ ***Research Member***

This is available to students who have completed terms 2 through 5 with a WMPG of 85% or higher. Students in their clinical terms can select from a variety of research projects and faculty mentors and begin a unique mentored experience in clinical research.

Both tracks are available only to students who have demonstrated academic excellence and have high GPAs. The faculty has established these criteria because they believe that the primary responsibility of all medical students is to master the material in their basic science courses and clinical rotations and strive for academic excellence. Students can also do research independently. However, as important as research is, students cannot let it interfere with their academic performance.

***The compendium was first developed in 2010 by Dr. Shivayogi Bhusnurmath, Dean of Academic Affairs and subsequently revised in 2014 by Drs. Shivayogi Bhusnurmath, Dean of Academic Affairs and Marios Loukas, Dean of Research, Associate Dean of Basic and Allied Health Sciences.***