Stony Brook Medicine

SCHOOL OF MEDICINE CURRICULUM REFORM 2012-2015

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VERSION ONE: RELEASED 2/28/14

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1. EXECUTIVE SUMMARY

Purpose:

The purpose of this document is to share with all stakeholders the process of transition of the curriculum of Stony Brook University School of Medicine to the **LEARN** curriculum to be implemented in the summer of 2014.

The Curriculum Evaluation Working Group (CEWG), a subcommittee of the SBU SOM Curriculum Committee took the leadership in the spring of 2012 in organizing the review of the curricular pedagogy.

Rationale:

The rationale for initiating such a major change was three fold:

- our successes with earlier course changes and changes in the fourth year,
- national trends and data, and student and
- faculty concerns regarding attendance and learning.

Goals:

The goals of the curriculum reform are:

- To enhance active learning
- Establish early professional identity formation
- Develop physician competencies in an integrated and contextual manner while allowing for individualized learning experiences for the millennial student with access to unprecedented resources for learning.

As a first step, **14 guiding principles** of the **LEARN** curriculum were developed by CEWG and approved by the SOM Curriculum Committee in December 2012. **Seven subgroups** of CEWG each with two co-chairs were created with broad participation from faculty students and administration to plan the LEARN curriculum. These subgroups focused on the following areas:

- Resources for Learning;
- Active Learning and Faculty Development;
- Student Learning and Peer Assessments;
- Integrated Curriculum;
- Clinical Experiences and Translation Pillars;
- Themes, Competencies and Intersession Topics; and
- Grading and Assessment of Students.

Based on the subgroup deliberations and final recommendations, the SOM Curriculum Committee approved the plans for the **LEARN** curriculum in November and December 2013. The projected implementation date is July 2014. Many meetings, faculty retreats and external experts helped us in the process.

The **LEARN** curriculum is an acronym for **L**earning focused, **E**xperiential, **A**daptive, **R**igorous and **N**ovel. There are **three distinct phases:**

- The foundational phase of about 18 months,
- The primary clinical phase of one year and
- The advanced clinical phase which is about 16 months long.

Five themes run throughout the entire curriculum:

- Patient and family centered care,
- Evidence based care,
- Patient Safety and Quality Care,
- Ethical and Professional Care, and
- Health Promotion and Preventive Care.

Key features of the **LEARN** curriculum include:

- Focus on **active learning**
- Flipped classrooms
- **Enhanced course integration** between basic science courses; between basic science and clinical courses as well as integration of social and behavioral aspects of contemporary medical care into the curriculum.
- Deliberate training for transitions by new **transition courses**
- Insertion of specific segments for themes in medical education and **translational pillars** in the clinical years
- Continued emphasis on currently existing **scholarly concentrations** and **global health** programs in the curriculum.
- **Longitudinal learning communities** will serve as student and faculty networking units throughout the curriculum.
- **Stony Brook Teaching families** (virtual and real) will provide teaching materials throughout the four years of the **LEARN** curriculum.

Outcomes we will monitor include national standardized exam scores, student feedback, AAMC Graduation Questionnaire trends, scales of student intrinsic motivation and lifelong learning skills. Every phase of the reform process was informed by scholarly review of the existing literature and best practices at other institutions as well as meaningful input and discussions by faculty and students. The reform process coalesced the energies of the faculty and re -energized the educational mission of the School of Medicine.

2. BACKGROUND AND INTRODUCTION

In 2010, the SOM Curriculum Committee adopted six ACGME competencies and 20 overall institutional learning objectives during preparation for the April 2011 LCME site visit (Appendix 1). A curriculum mapping and gap analysis was done and a new patient safety and quality care curricular thread was created in 2011. The pharmacology course was fully integrated within organ systems in 2011. The School successfully completed the LCME site visit in April 2011. Organ systems were moved into five distinct blocks with separate grades for each block in 2012. Based on the work of the Curriculum Evaluation Working Group (CEWG), 2012 also saw a full revamping of the fourth year of medical school. Building on the energy of the fourth year curricular changes and recognizing the national trends in curriculum reform, we embarked on a full review of the curricular pedagogy in April 2012. As a first step, CEWG developed a list of guiding principles that was approved by the SOM Curriculum Committee in December 2012. Based on the guiding principles, a curricular reform process was planned. We divided up into working groups with specific timelines, charge and requirements. SharePoint was used for data and document sharing. Regular meetings and reports helped keep the momentum as well as the accountability. Faculty retreats with broader participation were held at strategic points along the way to receive input and provide information on the progress of the reform work. We introduced team based learning as well as flipped classrooms in the curriculum in 2013. 2013 also saw the ground breaking for a new 240,000 square foot Medical and Research Translation Building with additional educational and testing facilities.

The guiding principles approved by the SOM Curriculum Committee are given below

Whereas

- Professional identity formation is aided by early clinical exposure and commitment to self-directed learning
- Students learn best when they are actively engaged in the process
- Learning happens best when it is contextual
- Team based problem solving results in deeper approaches to learning
- Development of physician competencies should start with entry to medical school
- Our current lecture attendance is poor
- The LCME wants the majority of learning to happen in an active learning format
- Changes in Step I towards more questions with clinical integration and placement at end of Year 3 is expected
- Change in deadline for MSPE results in inadequate time for elective exposure for students

The Curriculum Review Subcommittee makes the following recommendations to be adopted as principles for curricular pedagogy effective AY 2013. The implementation of these principles is expected to be complete on or before June 2015.

TEACHING AND ITS FORMATS

1. Faculty and administration will facilitate provision of high quality e-lectures, and/or e-modules (to facilitate multi-media learning) to students.

2. We will identify and recommend specific high quality resources for student learning. Faculty may use or adapt existing institutional or other high quality/ up to date resources to create an organized, detailed and logical syllabus, which must be provided in every course.

3. Whenever possible we will use interactive techniques (turning technologies etc.) during didactic presentations.

4. At least 50% of the content in a course will be delivered in an active learning format (Team Based Learning, Problem Based Learning, Case Based Learning, OSCEs, simulations, laboratories, CPCs etc.). These sessions will be designed to emphasize the more difficult concepts discussed in the syllabus.

5. The Office of Faculty Development in conjunction with the UGME office will support and train faculty and students in new pedagogical and assessment approaches so faculty and students can develop skills and comfort with new methods.*

LEARNING AND ITS FORMATS

6. We will shift the major emphasis of our curriculum to "student learning"

7. Students will have the primary responsibility of learning the materials and achieving the SOM competencies. Faculty will serve as facilitators and mentors.

CURRICULUM AND EVALUATION

8. Approximately 50 (+/- 10) percent of the components of the final grade of a course will be derived from non- MCQ sources. Suggested assessment methods include peer assessments, faculty assessments, internal written/oral exams, portfolio based assessment, OSCEs, problem solving exercises, essays etc.

9. Sessions can be mandatory only if they involve active learning, are amenable to measurement of at least three SOM competencies and use at least Level 2 of Bloom's Taxonomy in their objectives. Sessions may also be mandatory if real patients are present.

10. We will use AAMC medbiquitous curriculum inventory standards in defining our instructional strategies, assessment methods and resources*

11. Peer assessments of and by students will be an integral part of our assessment techniques.

12. Optimal interdisciplinary integration of basic, clinical and behavioral sciences and SOM competencies will begin in the first year of medical school after a period of foundational courses. We will shift didactic content delivery from a discrete course format into integrated organ systems and illness themes. An interdisciplinary team of instructors will deliver such integrated modules.

TIME FRAME

13. The clinical clerkships will begin in March of the second year of medical school. During the clinical clerkships, there will be designated blocks (translational pillars) interspersed with clerkships to facilitate reinforcement of basic sciences, new /interdisciplinary curricular themes and SOM competencies.

14. As we develop the specifics, we will incorporate an evaluation component as well as a resource planning component to our plans to modify the curriculum.

3. ORGANIZATION OF CURRICULAR REFORM PROCESS

The Curriculum Evaluation Working Group (CEWG) led by Drs Latha Chandran and Feroza Daroowalla provided leadership to the entire project during the planning phases.

April 2012- Dec 2012: We developed guiding principles for the new curriculum

January 2013- December 2013: Planning and Approval of the **LEARN** curriculum. A Curricular Reform Action Plan (Appendix Two) was created. During this stage, under the CEWG, seven working subgroups were organized as follows.

- **Subgroup One: Resources for Learning**
- **Subgroup Two: Active Learning and Faculty Development**
- **Subgroup Three: Student Learning and Peer Assessments**
- **Subgroup Four: Integrated Curriculum**
- **Subgroup Five: Clinical Experiences and Translation Pillars**
- **Subgroup Six: Themes, Competencies and Intersession Topics**
- **Subgroup Seven: Grading and Assessment of Students**

Each subgroup had two co-chairs and several members (Appendix 3). An orientation PowerPoint was provided with specific instructions on expected outcomes and plan of action with emphasis on team work and scholarly review of the literature (Appendix 4).

CEWG held biweekly meetings and kept agendas and brief minutes of the discussion. Subgroups met as frequently as they deemed necessary. Open discussion and dissension was encouraged at all meetings. Periodic faculty retreats were organized to maintain momentum and progress. All of the subgroups were provided the list of hot topics (from the LCME and AAMC Graduation Questionnaire) and the 25 core clinical conditions we focus in the clinical years.

Faculty Retreats:

We organized four highly interactive faculty retreats during this period. The presence of the Dean, Dr. Kenneth Kaushansky at all the retreats, engaged in the discussions and deliberations made it evident that the dean was actively involved in the curriculum reform process.

Faculty Retreat One: September 8th, 2012 **Educating Physicians in today's world: How do we reform?**
85 faculty and students participated in this first retreat. Two visiting professors gave us insights into lessons learned from their own curriculum reform process. Dr. Randolph J. Canterbury, MD, DFAPA, Wilford W. Spradlin Professor of Medicine, Senior Associate Dean for Education, UVA School of Medicine, Charlottesville, VA and Dr. Patricia A. Thomas, MD, Associate Dean for Curriculum, John Hopkins University School of Medicine.
This retreat energized the faculty and coalesced the momentum to building the **LEARN** curriculum. The retreat agenda, the key presentations (including Dr. Canterbury's and Dr. Thomas') the summary of the discussions are provided.

Faculty Retreat Two: May 11th, 2013 **Instructional Innovation: Getting to Active & Self-Directed Learning**
As a key guiding principle of the new LEARN curriculum, self-directed and active learning was the focus of our next retreat. Dr. Casey White, PhD, Associate Dean for Medical Education Research and Instruction UVA School of Medicine, Charlottesville, Virginia was the key note speaker. 65 faculty and students participated in this very appealing seminar. The agenda and key presentations (including Dr. White's) from that retreat are available for review.

Faculty Retreat Three: September 21st, 2013 **Transition to "LEARN" Challenges and Opportunities**
The SOM faculty had entered a period where we had completed the planning of the LEARN curriculum and were finalizing the details. This retreat was meant to cross pollinate our internal ideas regarding challenges and opportunities that lay ahead as we implement the **LEARN** curriculum. The agenda and the summary of discussions from this retreat is provided. The presentation from each subgroup is provided in the next section in detail.

Additionally, we participated in faculty development workshops in conjunction with the School of Nursing with external experts such as Larry Michelson and Paul Haidet (Team Based Learning Experts) and visited other medical schools such as NYU and Hofstra NS-LIJ to see curricular reform in action. Final recommendations from the working groups were all integrated and approved by the SOM curriculum committee in December 2013.

As of January 2014, during the implementation phase, the CEWG has been renamed the Learner Assessment and Curriculum Evaluation (LACE) Subcommittee. Subgroups were reorganized to reflect the reorganization of the LEARN curriculum.

4. RELEVANT DOCUMENTS FROM SUBGROUPS

Pertinent documents from each of the subgroups, including brief summary of the subgroup work including readings and final Power Point presentations are provided under each subgroup below.

An annotated bibliography of the key readings from all of the groups is provided here.

Subgroup 1: Resources for Learning

Brief summary of subgroup work

Final presentation to CEWG 1

Subgroup 2: Active Learning & Skill Development (OSCE's, simulations, TBL, CBL)

Brief summary of subgroup work

Final presentation to CEWG

Subgroup 3: Student Learning & Peer Assessments

Brief summary of subgroup work

Final presentation to CEWG

Subgroup 4: Integrated Curriculum

Brief summary of subgroup work

Final presentation to CEWG

Subgroup 5: Clinical Experiences & Translation Pillars

Brief summary of subgroup work

Final presentation to CEWG

Subgroup 6: Themes, Competencies & Intersession Topics

Brief summary of subgroup work

Final presentation to CEWG

Subgroup 7: Grading & Assessment of Students

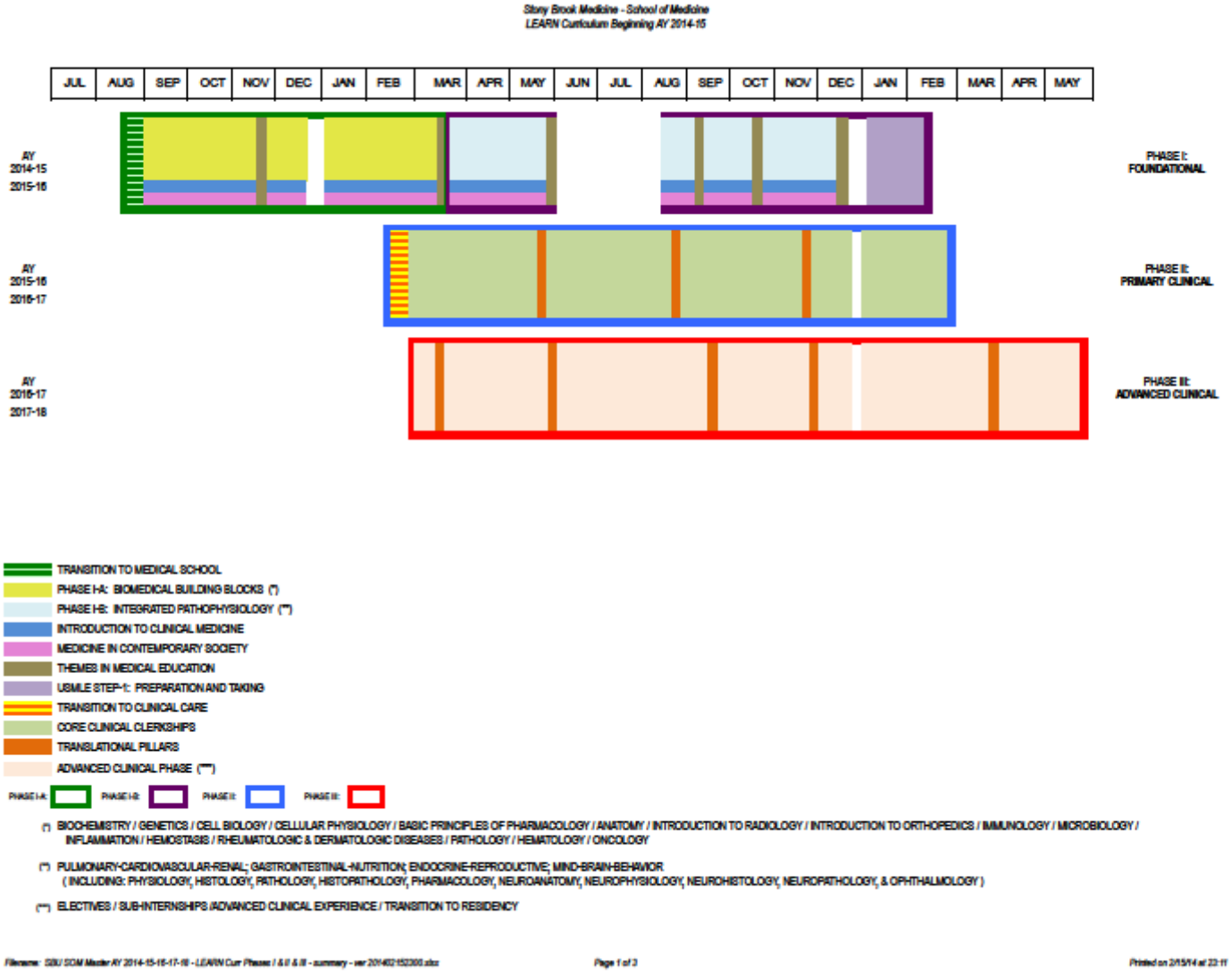
Brief summary of subgroup work

Final presentation to CEWG

5. CURRICULUM COMMITTEE DECISIONS

The SOM curriculum committee voted on the **LEARN** curriculum proposal details in its November and December 2013 meetings. A specific schematic for the **LEARN** curriculum with three phases, and an assessment philosophy was adopted. Additionally, the subcommittee structure of the Curriculum Committee was reorganized to meet the needs of the new **LEARN** curriculum.

Curriculum Schematic Phases I II III



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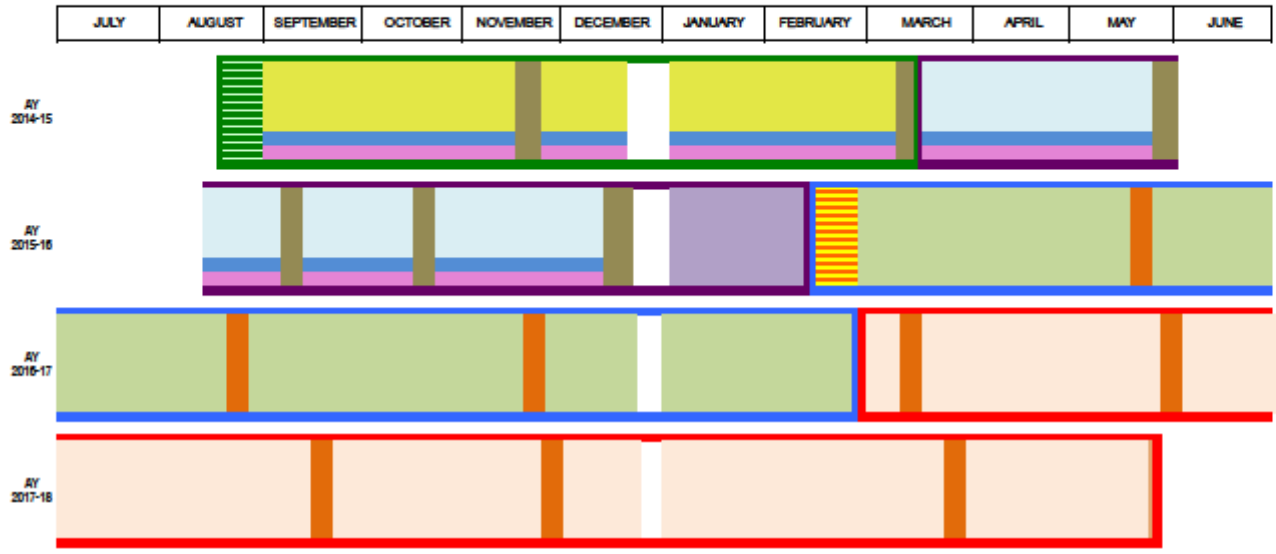
LEARN Curriculum Beginning AY 2014-15



- TRANSITION TO MEDICAL SCHOOL
- PHASE I-A: BIOMEDICAL BUILDING BLOCKS (*)
- PHASE I-B: INTEGRATED PATHOPHYSIOLOGY (**)
- INTRODUCTION TO CLINICAL MEDICINE
- MEDICINE IN CONTEMPORARY SOCIETY
- THEMES IN MEDICAL EDUCATION
- USMLE STEP-1: PREPARATION AND TAKING
- TRANSITION TO CLINICAL CARE
- CORE CLINICAL CLERKSHIPS
- TRANSLATIONAL PILLARS
- ADVANCED CLINICAL PHASE (***)

PHASE I-A: PHASE I-B: PHASE II: PHASE III:

(*) BIOCHEMISTRY / GENETICS / CELL BIOLOGY / CELLULAR PHYSIOLOGY / BASIC PRINCIPLES OF PHARMACOLOGY / ANATOMY / INTRODUCTION TO RADIOLOGY / INTRODUCTION TO ORTHOPEDICS / IMMUNOLOGY / MICROBIOLOGY / INFLAMMATION / HEMOSTASIS / RHEUMATOLOGIC & DERMATOLOGIC DISEASES / PATHOLOGY / HEMATOLOGY / ONCOLOGY

(**) PULMONARY-CARDIOVASCULAR-RENAL; GASTROINTESTINAL-NUTRITION; ENDOCRINE-REPRODUCTIVE; MIND-BRAIN-BEHAVIOR
(INCLUDING: PHYSIOLOGY, HISTOLOGY, PATHOLOGY, HISTOPATHOLOGY, PHARMACOLOGY, NEUROANATOMY, NEUROPHYSIOLOGY, NEUROHISTOLOGY, NEUROPATHOLOGY, & OPHTHALMOLOGY)

(***) ELECTIVES / SUB-INTERNSHIPS /ADVANCED CLINICAL EXPERIENCE / TRANSITION TO RESIDENCY

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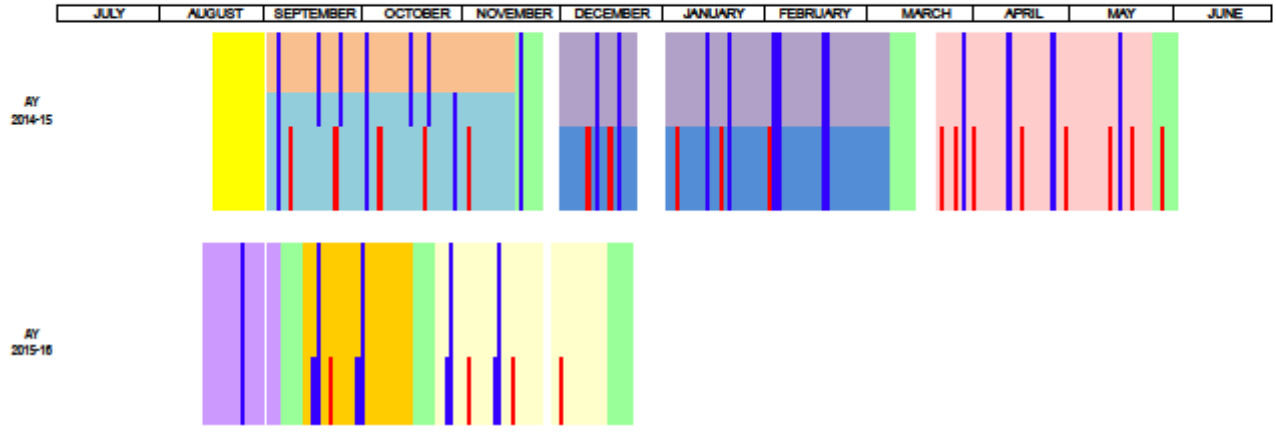
LEARN Curriculum Beginning AY 2014-15

PHASE I DETAILED VIEW



ORIENTATION AND TRANSITION TO MEDICAL SCHOOL

BIOCHEMISTRY / GENETICS / CELL BIOLOGY / CELLULAR PHYSIOLOGY / BASIC PRINCIPLES OF PHARMACOLOGY

THE BODY (ANATOMY / INTRODUCTION TO RADIOLOGY / INTRODUCTION TO ORTHOPEDICS)

PATHOGENS AND HOST DEFENSE (IMMUNOLOGY / MICROBIOLOGY / INFLAMMATION / HEMOSTASIS / RHEUMATOLOGIC & DERMATOLOGIC DISEASES)

BASIC MECHANISMS OF DISEASE (PATHOLOGY / HEMATOLOGY / ONCOLOGY)

INTEGRATED PATHOPHYSIOLOGY: PULMONARY, CARDIOVASCULAR, & RENAL (INCLUDING PHYSIOLOGY, HISTOLOGY, PATHOLOGY, HISTOPATHOLOGY, & PHARMACOLOGY)

INTEGRATED PATHOPHYSIOLOGY: GASTROINTESTINAL & NUTRITION (INCLUDING PHYSIOLOGY, HISTOLOGY, PATHOLOGY, HISTOPATHOLOGY, & PHARMACOLOGY)

INTEGRATED PATHOPHYSIOLOGY: ENDOCRINE & REPRODUCTIVE (INCLUDING PHYSIOLOGY, HISTOLOGY, PATHOLOGY, HISTOPATHOLOGY, & PHARMACOLOGY)

INTEGRATED PATHOPHYSIOLOGY: MIND, BRAIN, & BEHAVIOR (INCLUDING NEUROANATOMY, NEUROPHYSIOLOGY, NEUROHISTOLOGY, NEUROPATHOLOGY, OPHTHALMOLOGY, & PHARMACOLOGY)

INTRODUCTION TO CLINICAL MEDICINE

MEDICINE IN CONTEMPORARY SOCIETY

THEMES IN MEDICAL EDUCATION

Typical Week in LEARN Curriculum

TYPICAL WEEK IN PHASE ONE OF THE LEARN CURRICULUM				
TIME	DAY			
	MONDAY	**TUESDAY**	**WEDNESDAY**	**THURSDAY**
9 A- 10 A	Lecture(Self or In class)			
10A-11A				
11A- 12 N	Small group			
12- 1 P	LUNCH/CLASS MEETINGS/NETWORKING/SOCIAL			
1-2 P	Lab/Small Group	ICM/MCS	Lab/Small Group	ICM/MCS
2-3 P				
3-4 P	SELF STUDY/ PREP for next day			
4-5 P				

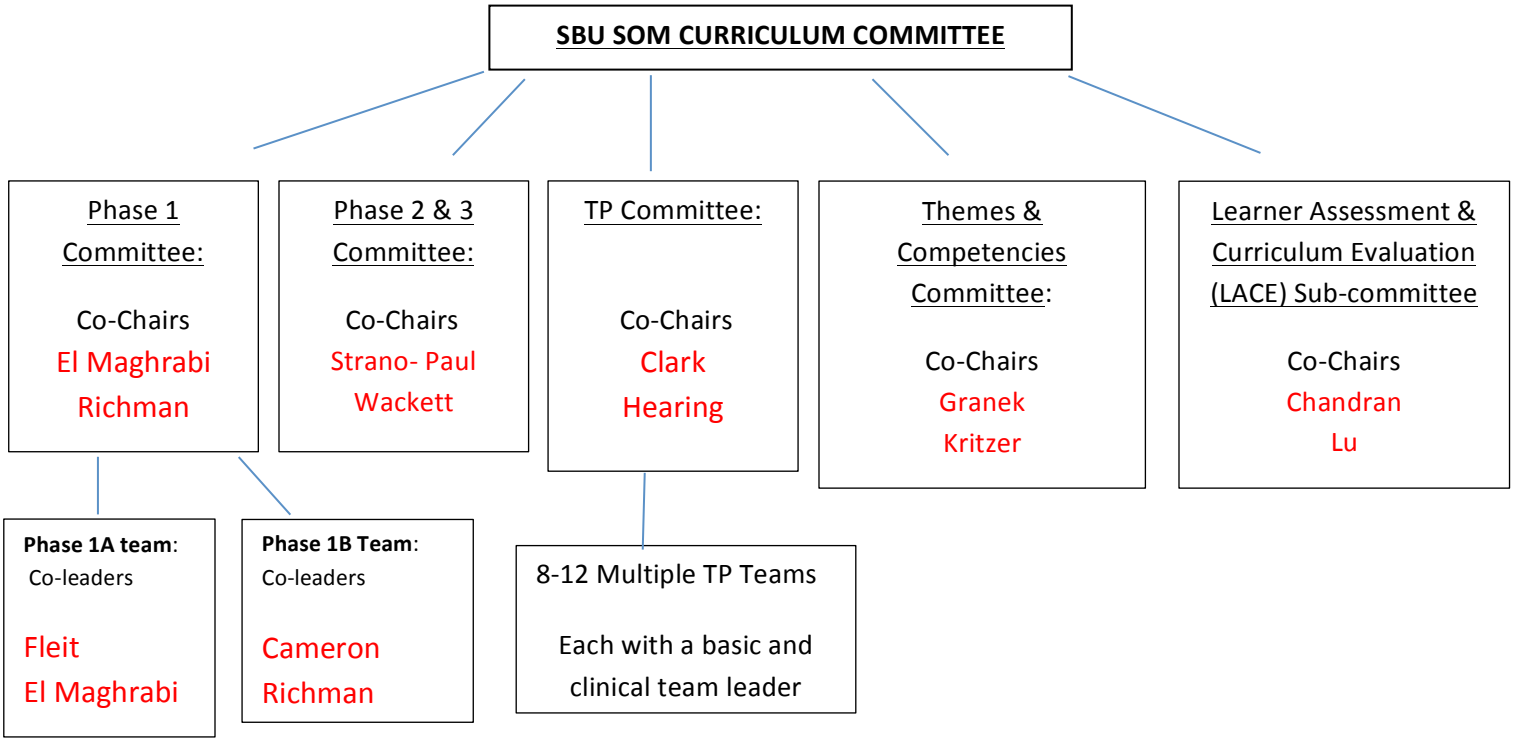
Typical TIME Week

TIME: Themes in Medical Education Block Format					
TIME	**DAY**				
	MONDAY	**TUESDAY**	**WEDNESDAY**	**THURSDAY (1)**	**THURSDAY (2)**
9 A- 10 A	Meet the Patient	TBL, content for all 5 themes &focus for week**	Teaching Family Case***	Written Reflection	6 teams Individual OSCE & related activity (soft exam content)
10A-11A				6 teams Facilitated Small Group	
11A- 12 N	Non Facilitated Groups, complete template*		Team BasedLlarge Group, theme content learning		
12- 1 P	LUNCH/CLASS MEETINGS/NETWORKING/SOCIAL				
1-2 P	Large Group, clarify the issues	TED Talk/Guest Lecture			
2-3 P		Site Visit/Outside Organizations			
3-4 P	SELF STUDY/ Prep for next day				
4-5 P					
	*Template	Major issues of case for each of the 5 themes			
	**TBL	Case focused content			
	***Teaching Family Case	Theme content within case			

The SOM Curriculum Committee reorganized its subcommittee structure to ensure adequate coordination of the **LEARN** curriculum. New leaders were selected for the themes of the **LEARN** curriculum.

REORGANIZATION OF CURRICULUM ADMINISTRATION

Due to the significant curricular changes planned for the LEARN curriculum beginning 2014-2015 academic year, the following is being proposed as an efficient way of connecting the various components of the curriculum in a coherent whole. It also aligns with the team leadership concept approved earlier this year by the Curriculum Committee.



THEME	CO- LEADERS
Patient and Family Centered Care:	Granek, Bronson
Evidence Based Care:	Sussman, Hossein
Patient Safety and Quality Care:	Singh, DeCristofaro
Ethical and Professional Care:	Post, Keirns
Health Promotion and Preventive Care:	Granek, Morelli

Phase 1B Block Leaders:	
CPR:	Richman
MBB:	Kritzer
Repro/Endo	Garduno
GI/Nutrition	Nagula

6. IMPLEMENTATION STEPS

THIS SECTION WILL BE COMPLETED AT THE NEXT REPORTING PERIOD.

7. ACKNOWLEDGEMENTS

We recognize and acknowledge the contributions of all faculty members and students in the School of Medicine who participated in retreats and meetings at various points of the reform. The School also especially thanks the leadership in the School of Nursing as well as in the Applied Informatics Division for their cooperation at various stages of the reform. The SOM gratefully acknowledges the following members who were exceptionally active in creating the LEARN curriculum.

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Kaveh Moghbelli

Most importantly, the support provided by the Dean and Senior VP of Health Sciences Dr. Kenneth Kaushansky as the Chair of the Curriculum Committee and the leader of the school was critical in ensuring a successful reform process. Lastly, Ms. Donna Kaufman provided many hours of patient and diligent administrative support over the entire project. We gratefully acknowledge her commitment and work.