Guidelines for curriculum development –
Pre-clerkship – Foundations of Medicine, Cells Tissues and Mechanisms of Disease; Integrated Core Systems

The Pre-Clerkship Curriculum consists of the following courses and requirements:
Systems 1 – (Cells to Society; Foundations of Medicine; Cells, Tissue & Mechanisms of Disease; and Microbiology & the Immune System)
Systems 2 – (Musculoskeletal & Integument System; Gastrointestinal; and Mind Brain and Behavior)
Systems 3- (Cardio-Vascular, Pulmonary, Renal, Endocrine & Reproductive Medicine, Hematology)
Clinical Performance Development (CPD-1a,b,and c)
Social Issues in Medicine (SIM)

The following procedural guidelines and policies inform our design of activities in the Next Generation curriculum.
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I. Overall system design

i. Structure of weeks and modules

As of July 2015, the pre-clerkship phase of the Next Generation Curriculum occurs during the first three semesters of the educational program. It consists of six graded courses. Integrated Systems I (first semester), Integrated Systems II (second semester), Integrated Systems III (third semester), Clinical Performance Development 1 (all three semesters and designated as CPD-1 a, CPD-1 b and CPD-1 c), Social Issues in Medicine (either semester one or two during the first year), and the Transitions Course. Each of these courses assigns a pass/fail grade.

Integrated Systems I consists of the following course components or “systems”: Cells to Society, Foundations of Medicine, Cells, Tissues and Mechanisms of Disease, and Microbes and the Immune System. Integrated Systems I consists of the following course components: Musculoskeletal-Integument System, Gastrointestinal System, and Mind, Brain and Behavior. Integrated Systems III consists of the following course components: Cardiovascular System, Pulmonary System, Renal System, Endocrine-Reproductive System, and Hematology. In order to receive a passing grade for an integrated system course, a student must have an average score for all components/systems of 70% or above.

A system’s learning activities must be scheduled from 8:10 am to 12:00 noon, Monday through Friday. Students are expected to devote an average of 30 hours per week preparing for class/studying. The primary purpose of contact time with faculty is to develop critical thinking skills, as well as to learn to analyze and evaluate information and to apply it in a setting that will benefit patient care and the future expansion of medical knowledge. Although foundational knowledge will be acquired during class time, a substantial amount of foundational knowledge is expected to be acquired from independent study resources such that students come to class ready to apply, analyze and/or evaluate information. The provided resources and the class activities will jointly address the knowledge, skills, or behaviors described in the learning objectives of a given session.

As much as possible, each week should have a cohesive theme that builds up the basic science knowledge and that progressively affords opportunities to integrate knowledge and apply it in a clinical context. Each period of 3-4 weeks will culminate with a summative assessment (see section III. Assessment and Grading).

The following table lists the duration and number of assessment periods (also referred to in this document as modules) for each of the systems:

<table>
<thead>
<tr>
<th>System</th>
<th>Length in weeks</th>
<th># of summative assessment periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Medicine</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Cells, Tissues and Mechanisms of Disease</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Microbes and the Immune System</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Musculoskeletal/Integument System</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Gastrointestinal System</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Mind, Brain and Behavior System</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Cardiovascular System</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Pulmonary System</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Renal System</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Endocrine/Reproductive System</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Hematology System</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
The focus of the pre-clerkship curriculum is to acquire basic science knowledge and apply it to clinical problems. Throughout an organ system, it is essential to devote sufficient time to the study of normal anatomy, histology, and physiology before moving on to pathophysiological processes (note that threads like pathology and radiology should always reference normal, even if that information was previously covered). General principles for anatomy, cell biology and histology, biochemistry, genetics, microbiology, pathology, pharmacology, and physiology are taught at different times in the pre-clerkship curriculum and should be referenced and reinforced whenever relevant.

The different organ systems should shape their content as follows*:
10% -15%: General Principles
15%-25%: Normal organ structure and function
40%–50%: Abnormal processes – main focus on understanding mechanisms of disease
10%–20%: Principles of therapeutics – main focus on the principles rather than patient management

Note that the content sequence shown above is also to be followed in the structuring of each system: general principles and normal structure and function should precede abnormal processes and principles of therapeutics.


ii. Scheduling information

A System’s learning activities must be scheduled from 8:10 am to 12:00 noon, Monday through Friday. Three 5-10 minute breaks must be provided per morning. Note that there needs to be a 10-minute gap between recorded events, due to the way in which the Podcasts are captured (see Section II.ii.d. Session Podcasts)

In general, labs must be scheduled during the morning hours and may not be moved into the afternoon schedule without special permission from the Associate Dean for Curriculum. Note that students have Clinical Performance Development (CPD) small groups once a week and that systems are required to maintain a minimum of 3 free afternoons per week for study. Note that, for each semester of the first year, half of the students will have to complete 30 hours of community service as part of the Social Issues in Medicine course.

There are a number of rooms scheduled for laboratories and small group sessions in the NxGen curriculum. Large group sessions take place in the Medical Education Building, either in the Learning Studio or the Auditorium. From August to December M1 students overlap with M2 students in the use of these teaching spaces. In order to facilitate scheduling there are default room assignments for “first year” and “second year” sessions, as follows:

− “1st years” in Auditorium 8:10-10:00 and in Learning Studio 10:10-12:00
− “2nd years” in Learning Studio 8:10-10:00 and in Auditorium 10:10-12:00

Systems Leaders may exchange locations of specific sessions by mutual agreement, however:

− The classes may exchange rooms only once each morning
− The minimum session time before a switch can occur is one hour [50 min session]. System Leaders may arrange to occupy the same room for all sessions within a given morning.
iii. Learning activities

Learning activities must be based on the learning objectives. Structured class activities should be "slices" of the knowledge, skills, and behaviors expected of the students. Activities should be selected by the faculty with expertise that emphasize or illustrate key or complex principles and that demonstrate the application of acquired knowledge, skills, or behaviors to medical problems, especially exercises which focus on analysis and evaluation. These structured classroom activities must fit within the designated time period. The Instructional Designer, Vera Chen, PhD, is available to help with selecting activities that fit your objectives.

The primary purpose of contact time with faculty is to develop critical thinking skills and to learn to analyze and evaluate information and apply it in a setting that will benefit patient care and promote the future expansion of medical knowledge. Students will practice working together in structured, team-based activities that emphasize the collaborative nature of science and medicine. Furthermore, the structured activities provide opportunities to practice working together, as in team-based patient care functions.

Learning should take place in a clinically relevant context. The learning methods should reflect the way students will demonstrate their knowledge, skill, or behavior, as should the manner in which they are assessed.

a. Clinical Faculty compensation for teaching efforts

Faculty teaching effort in the Integrated Clinical Sciences is compensated based on whether the method of student learning is considered to be active or passive in the NxGn curriculum.

Compensations for teaching is as follows:

**Passive learning**

- Lectures: Credit of 1 hour for each hour of delivery and 3 hours of preparation for each hour delivered.
- Pre-recorded lectures: Credit of 1 hour for each hour of delivery and 3 hours of preparation for each hour delivered.
- Pre-recorded lectures – R (repeated): Hour for hour, no preparation time
- All other instructional methods considered passive: Hour for hour. (This category includes Conference, Demonstration and Mentorship)

**Active learning**

- Small Group Discussion: 1-4 hours of small group and 1 hour of preparation
- Laboratories: 1-3 hours of wet or dry laboratory and 1 hour of preparation.
- All other instructional methods considered active: 1 hour for each hour of delivery and 5 hours of preparation for each hour delivered
NOTES
- Events repeated within an academic year will receive the indicated compensation for the first session and hourly compensation for the remaining sessions.
- Cells to Society, Social Issues in Medicine do not receive small group prep-time support: Credit of 1 hour for each hour, no prep time
- Each clinical faculty member’s hourly salary, restricted to NIH cap, including UVA fringe benefits, is the basis for compensation (assumes 55 hours per week for 48 weeks and includes UVA benefits.)
- Compensation for patient presentations will be hour for hour, irrespective of whether the session is lead by the faculty member or the students.
**b. Types of learning activities**

The following tables list learning activities currently in use in the NxGen curriculum according to whether they are considered to be active or passive. Educational activities that comprise active learning are those in which the student applies, analyzes, or evaluates information AND in which the students are interacting with BOTH the material and with others in a way that generates feedback (peer or instructor). For a session to be considered active learning, the “active learning” component must represent at least 40% of the allotted time. If this definition is met, then the session is counted as “active” for the entire allotted time. The goal of the NxGen curriculum is that least 60% of all sessions will be active learning sessions.

<table>
<thead>
<tr>
<th><strong>AAMC Instructional Methods Considered ACTIVE in the NxGn Curriculum</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Case-based Instruction/learning</td>
</tr>
<tr>
<td>Concept Mapping</td>
</tr>
<tr>
<td>Discussion, Large Group (&gt;12 students)</td>
</tr>
<tr>
<td>Discussion, Small Group (&lt; 12 students)</td>
</tr>
<tr>
<td>Games</td>
</tr>
<tr>
<td>Journal Club</td>
</tr>
<tr>
<td>Laboratory</td>
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<tr>
<td>Patient Presentation- Learner</td>
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<tr>
<td>Self-Directed Learning</td>
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<tr>
<td>Service Learning Activity</td>
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<tr>
<td>Simulation</td>
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<tr>
<td>Team-based Learning (TBLs)</td>
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<tr>
<td>Team Building</td>
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<tr>
<td>Workshop</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AAMC Instructional Methods Considered PASSIVE in the NxGn Curriculum</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference</td>
</tr>
<tr>
<td>Demonstration</td>
</tr>
<tr>
<td>Independent Learning</td>
</tr>
<tr>
<td>Lecture</td>
</tr>
<tr>
<td>Mentorship</td>
</tr>
<tr>
<td>Patient Presentation- Faculty</td>
</tr>
<tr>
<td>Peer Teaching</td>
</tr>
</tbody>
</table>

1. The AAMC defines small groups as 12 students or fewer. Groups with larger number of students are defined as large.

2. Service Learning Activities include community SIM placements.

3. The AAMC includes standardized patients in the category of Simulation.

4. The AAMC requires that there be a “relatively small group” of learners in order for a session to be categorized as a workshop.

5. In the NxGn curriculum, peer teaching is not considered active because only the individual student teaching is active.
c. Titles of learning activities

The title of each NxGn learning activity should convey to the learner what they can expect during the activity. Below are descriptions of some of the titles currently in use in the NxGn curriculum.

**Lectures:** A type of instructional activity where over 60% of the allotted time is devoted to one or more faculty members presenting information to the students, regardless of the size of student group or the venue.

**Recorded Lecture (also Pre-recorded lecture / PRL):** digital recording of a narrated lecture, (currently created with the Camtasia software) for viewing outside of class time.

**“-R”:** A lecture or other event designated as “-R” typically denotes an event that is repeated within an academic year i.e. lab done twice within a week, with half the students at one time. In the case of Recorded Lectures, it represents Recorded Lectures that were recorded in a previous year.

**Clinical Case Presentation:** Cases are presented on paper, video, or computer format. For instruction to be coded as “Case Presentation,” at least 70% of the time must be devoted to one or more clinical case presentations: Cases must include at least three of the major components of a teaching case (Chief Complaint, History of Present Illness, Past Medical History, Family History, Social History, Physical Examination, Laboratory Investigations, Procedures, Radiographic Findings, and Management). Note that in order for a case presentation to be considered active learning (as opposed to a lecture), it must substantively involve students in the discussion of the case, including the work-up or treatment of the patient presented.

**Large Group Discussion:** the activity is organized primarily for discussion and groups contain more than 12 students (often involving the whole class). For instruction to be coded as “Discussion,” at least 40% of the time must be devoted to student engagement either with an instructor and/or with other students (otherwise the activity should be coded as lecture).

**Problem Sets:** This title refers to are a type of Large Group Discussion where the focus is the presentation of multiple short problems for the students to work through and discuss their answers, receiving feedback from the faculty and/or peers. The problems may be given prior to class or during class; students may work on them individually or in groups either prior to or in class, and the format of the problems may be anything appropriate to the content (e.g., MCQ, vignettes, equations). The key features are that feedback is given by the faculty during the block of instructional time coded as “Problem Set” and that at least 70% of this time is spent in reviewing or working the problems.

**Team Based Learning** (TBL) activities are an integral element of the NxGen curriculum. TBLs should be used when appropriate to the knowledge, skills and behaviors to be learned and applied. To further TBLs as a forum for collaborative work with reflection and to maintain a consistency across systems, there must be an average of at least one TBL per two week period. A TBL Education Group (TBLEG) was formed within the Office of Medical Education to manage and maintain TBL consistency during the infancy of NxGen. This group is now available on a consultation basis to assist with selection of appropriate topics for TBL exercises, to develop the materials, and to orchestrate the session. Each new TBL session should be evaluated by the students and an observer from the TBLEG. The observer is to be someone other than the TBLEG member who assisted in the development and facilitation of the TBL. The contact person for TBLEG is Elizabeth Bradley. Representatives of TBLEG will train faculty in TBLs on an as needed basis. It is expected that faculty would learn the basics of TBL through a
course(s) and/or experience under the guidance and supervision of the TBLEG. Then, after becoming competent in TBLs under TBLEG supervision, instructors can implement and teach TBL independently. TBLs require attendance because the TBL groups/teams have peer evaluations supervised by faculty.

**Small Group Discussions:** Small Group Discussion activities are organized primarily or exclusively for discussion among groups of 12 or fewer students and an instructor. At least one instructor must be assigned to each small group, and all instructors must receive training prior to moderating small group sessions. To further ensure a standardized learning experience, teaching points for the session must be shared between all instructors and posted to the system website following the session. If less than 40% of the time is devoted to student engagement, either with an instructor and/or with their groups, the activity must be coded as a lecture (see section c. below)

**Laboratory:** Labs involve students working individually or in groups to examine data and/or tangible specimens in order to meet defined learning goals. While Lab activities may contain some didactic presentation of material, for instruction to be coded as “Lab,” the students must be engaged either hands-on or in their groups for at least 70% of the instructional time. Lab activities can be divided into two subtypes as follows:
- **Wet Lab:** Students are actively manipulating specimens
- **Dry lab (in silico):** Students are actively involved with specimens presented on a computer or other simulated method.

**Demonstration:** This activity type should be used to identify a scheduled activity that does not fall within any of the other activity types (e.g., introductory remarks during orientation or surveys given to class). This type of activity may or may not include testable learning objectives.

**Independent Learning:** A structured instructional activity completed by students outside of class time. Resources for this activity type would exclude pre-recorded lectures created by UVA School of Medicine faculty, as there is a separate activity type to list for recorded lectures.

**Conference:** Instructional activity where two or more discussants present to a student group of any size, with exchange or coordination among the presenters. Shared lecture time where material is presented without interaction between presenters or where the objective is to tie the content together should be coded “Lecture.”

**Patient Presentation:** For instruction to be coded as “Patient Presentation,” at least 50% of the time should be devoted to a real patient who is physically present in real-time and available to interact with the students, their instructor or both. Patient Presentations occur once per week throughout the pre-clerkship curriculum, and are part of Clinical Performance Development (CPD). The patient is chosen based on the system’s topic for that week and scheduled as a 50-minute session. Content from these sessions is not included in the system’s assessments. Patient presentations require attendance to demonstrate professional respect for the patient. Students are expected to dress professionally and wear their white coats during all patient presentations. Entry to the room where a patient is being interviewed will not be allowed once the interview begins.

**Simulation:** This category includes Standardized Patients as well as other simulation activities.
- **Standardized Patient (SP):** An individual trained to portray a patient is used to present clinical and interpersonal features of a case. Again, this can be done individually, in groups,
or for the entire class, as long as the SP is available for interaction with the students, the instructor or, both.

- Simulation: A case or components of the case (e.g., individual clinical skills) is presented to the student using non-human simulation. This simulation can be full patient or partial-task trainers. If the focus of the exercise is clinical skills, the students must be significantly involved in hands-on activities in order to code as “Patient Presentation.”

**Recorded Lecture – repeated:** This activity type denotes the use of a pre-recorded lecture previously used in the curriculum.

**Review:** This term refers to instructional activities in which the time is spent reviewing material that was previously presented; that is, less than 30% of the time is spent on the delivery of new content. If the session involves student participation in discussion for at least half of the allotted time, the activity should be coded as Large Group Discussion.

**Events that are repeated within a single academic year** (commonly to accommodate a fraction of the students per activity offering) will be coded with the corresponding activity type, followed by the letter “R”. As an example, a lab offered four times in one week will be coded as Lab for the first session and Lab-R for the subsequent 3 sessions.

d. **Active Learning**

The following are examples of “active learning” components that can be incorporated into different activity types:

- **1-minute paper:** Short writing task designed to allow students to focus attention on a single important term, name, or concept from a particular lesson, followed by discussion. Papers do not need to be collected or graded, but answers should be shared and students should receive formative feedback on their contributions.

- **Audience Response system (ARS):** Students participate in the sessions by responding to questions / statements via response software, with interactive discussion. ARS can be used to administer formative assessments

- **Problem sets/Worksheets:** Written activity in which students apply principles and concepts to real life problems.

- **Cases:** Scenario-based problem-solving activity.

- **Discussions:** Scenarios/activities that require students to integrate their knowledge and skills to solve problems that relate to course material while interacting with their peers and instructor.

- **Think-Pair-Share:** Short, individual oral or written response to a prompt/question. Students are then instructed to share and discuss briefly with partner, then asked to share with larger group.

- **Question and Answer:** Students orally respond to a question, comment, etc., either voluntarily or by being called on.

- **Jigsaw:** Team-based peer teaching for which each member becomes a subject matter expert in 1 of 4 areas selected from current course material. Each member teaches their subject matter to the group.

- **Concept Maps:** Drawings or diagrams that show the mental connections students make between a major concept presented and other concepts they have learned.

- **Defining features Matrix:** Students categorize concepts presented according to presence (+) / absence (-) of defining features. This is a very useful exercise to help students develop conceptual frameworks.
Debates: Small or large group structured exploration of central concepts, data, beliefs and values.

NOTE: More than 40% of the time needs to be occupied with these active learning activities to make the whole session an engagement session.

e. Student Participation in Educational Activities

The Next Generation Curriculum provides many diverse learning opportunities for our medical students and attendance at all activities is encouraged. Students, however, are responsible for their own learning and are not required to attend many activities. Attendance is mandatory for all activities in which team accountability is required, including but not limited to, Team-Based Learning activities, Anatomy Dissection Teams, and Clinica Performance Development groups. Attendance also is mandatory for all patient presentations, interviews or panel discussions out of professional respect for the patient(s). Failure to attend a mandatory activity will result in a concern card being submitted to the student’s college dean, unless the college dean has excused the absence in advance. Whether or not an absence is approved by the college dean, students must inform the System Leader(s) and the appropriate instructor about their absence from mandatory activities.

iv. Approval of plans

The Curriculum Committee approves all course and system designs and reviews them on an annual basis. Course and System Leaders are expected to complete a self-evaluation annually and present changes in their plans to the Curriculum Committee for approval. A revised schedule indicating session titles and activity type, along with the proposed pre-class preparation and learning objectives, should be submitted to the Curriculum Committee and the course, system, and thread leader community after the annual review process. This is required in order to keep everyone informed of the full content spectrum, sequence, and educational methods.

The assessment plan must comply with the NxGen assessment philosophy and be reviewed by the Director of Assessment (Jim Martindale).

v. Monitoring and Revision

Monitoring and revision of system based curricula:

The Pre-clerkship phase of the curriculum is evaluated and monitored continuously. Weekly and end of course feedback from students, as well as daily observations by System Leaders, provides the data upon which immediate and longer term improvement decisions can be made. The Director of Curriculum Evaluation and her team create final evaluation reports for each System Leader upon the conclusion of the course, to which the latter respond through a self-study. All of this information is reviewed by the Curriculum Committee, which creates recommendations for the following year. These recommendations provide the basis for the subsequent year’s revision and review process.

Thread leaders in the NxGen curriculum also monitor and revise the curriculum by leveraging their expertise as specialists in the different disciplines that comprise the science and practice of medicine (i.e. physiology, pharmacology, nutrition, radiology, etc). The Curriculum Committee solicits thread leaders from interested members of the SoM faculty and appoints them for renewable three year terms; there are currently 24 threads established in the NxGen curriculum. Thread leaders annually review the learning objectives and learning
activities associated with their threads in order to ensure that (1) there is a coherent sequencing and presentation of topics within the thread, and that (2) topics within a thread are integrated within each of the systems, between different systems, and between the pre-clerkship, clerkship, and post-clerkship phases of the curriculum. The Director of Curriculum Integration and Development works with individual thread leaders to oversee this process, and to establish new threads as they are created.

The Director of Curriculum Integration and Development also oversees formal working groups of faculty members that review sets of learning objectives associated with different threads or systems. All NxGen pre-clerkship learning objectives are reviewed against the criterion that students must master them in order to perform well in the required clerkships or to practice medicine as a generalist physician. This formal review process enables faculty to identify gaps and redundancies in the curriculum and to provide suggestions for revisions. Review committees are formed on an ad hoc basis and include clinicians familiar with the required clerkships as well as generalist physicians.

Finally, faculty, staff, and administration can informally review the NxGen curriculum at any time by reviewing the elements of the curriculum within the XCredit curriculum database. This database includes all the learning objectives, learning resources, descriptions of learning activities, and information about instructors. Suggestions for revisions must be forwarded to the System Leaders or thread leaders, who make decisions on implementation.

II. Teaching materials

i. Learning objectives

Learning objectives stem from and map back to the 12 UVA Competencies which are the education program objectives.

Each learning objective is an outcome statement that captures specifically the knowledge, skills, or behaviors the learner should be able to exhibit following instruction. Learning objectives employ specific terminology that has an unequivocal interpretation AND provides a learning outcome that can be assessed. Therefore, each learning objective must be narrow and specific, such that it can effectively guide the selection of content, development of an instructional strategy, development and selection of instructional materials, and construction of instruments for assessing and evaluating student learning outcomes.

Well-crafted objectives identify only one learning outcome, are consistent with course goals, and are precise. They unequivocally inform learners of what is to be achieved.

The Instructional Designer, Vera Chen, PhD, can provide assistance to anyone wishing assistance in writing learning objectives.

ii. Independent Study Resources

The Curriculum Committee determined that ~30 hours of preparation/study time is a reasonable expectation for medical students in the pre-clerkship period (three afternoons per week -12 hours; 3 hours per evening – 15 hours; weekend - 3 hours = 30 hours total).
Students must be provided with resources to efficiently acquire the knowledge, skills, or behaviors specified in the learning objectives. Aside from the resources provided during the scheduled instructional activities, the students can be given independent study resources to prepare for class. Such independent study resources might take the form of assigned readings (e.g. a text, article or handout), a video, a website, etc. The library is available to help select references and can answer questions about access to online resources.

**a. Assigned reading**

Assigned reading can be provided in one of three forms

1. **Textbook**
   - **Textbook with online access** through the Health Sciences Library. Recommended option.
   - **Textbook adopted** for use in the NxGen system (Students have purchased a copy of the textbook).

2. **Article**
   In order to comply with copyright rules, please provide the link to the article, not the article itself.

3. **Handout**
   If you choose to provide a handout you must attribute all materials that are used, i.e., label the material clearly as “copyrighted” to the source and “not for redistribution”. Additionally, per doctrine in copyright of fair use, instructors should use only a reasonable amount of material from any third-party source without getting permission or paying fees (see guidelines designed to assist instructors with complying with copyright restrictions when using the School of Medicine’s Learning Management System at [https://www.hsl.virginia.edu/sites/default/files/SOM Copyright FAQ Spring March 2011.pdf](https://www.hsl.virginia.edu/sites/default/files/SOM Copyright FAQ Spring March 2011.pdf)). Handouts should only be provided when an adequate published resource is not available.

The library is available to help select references and can answer questions regarding access to online resources and copyright rules.

For help please contact:
Karen Knight, MLS
Medical Librarian
Email; kknight@virginia.edu
Phone: (434) 924-0056

**b. PowerPoint slides**

PowerPoint slides used during lectures must be posted to the Student Source on the Wednesday prior to the week of class. Where possible, a single set of slides is preferable (excepting activities such as problem sets). If providing the slides ahead of time “gives away” the active learning component, follow the instructions below to block pertinent slides.

In order to block slides, an opaque rectangle can be inserted over the slide, covering all contents. The box can contain a statement such as “This slide is blocked because it contains an active learning activity. It is an honor code violation to remove this box and view the slide prior to its presentation in the live session.” Addition of this box prevents the students from accidentally advancing to the answer slide of an engagement exercise, yet permits them to take notes in the right place. Students can easily remove the box and, by the end of the session, have a fully annotated, final version of the slides.
c. Pre-recorded lectures

Lectures may be narrated and recorded. We currently use the Camtasia Studio software [http://www.techsmith.com/camtasia.html](http://www.techsmith.com/camtasia.html) to generate pre-recorded lectures. The process entails narrating the slides in the same way as one would during a live lecture. The recorder’s voice and screen capture results in a recorded lecture in mp4 format for distribution to students. A maximum of 4 hours of pre-recorded lectures may be assigned per week. If more than 4 hours of pre-recorded lectures need to be assigned in a given week, a corresponding amount of time needs to be cleared from the scheduled class time (8:10 AM to 12:00 PM) to accommodate these additional lectures. PRLs should be 15-30 minutes in length.

The school maintains a computer lab with the Camtasia software (Health Sciences Library room #1307D) that faculty and staff can reserve to record lectures. Individuals interested in acquiring a copy of the Camtasia Studio Software for personal use can consult with Educational Technology staff for advice.


For assistance in creating a pre-recorded lecture (PRL) please contact the Educational Technology Director (Marl Moody). Email: mmoody@virginia.edu; Phone: 924-1528

d. Session Podcasts

Podcasts can be created for any session scheduled in the Medical Education Building (Learning Studio or Auditorium). The podcast captures the video signal being projected in the room (in the case where split projection is used in the Learning Studio it captures ONLY the video signal for screen 1) and combines it with the audio capture from all microphones in the room. Note that, for this reason, an accurate recording of the session requires that both instructors and students speak through a microphone at all times AND that the mouse cursor is used as a pointer instead of a laser pointer. Additionally use of laser pointers represents an ADA issue, as 7-10% of men are red-green colorblind, making the laser pointer almost invisible to them. Instructors are prohibited from using laser pointers.

Podcasts are automatically scheduled to occur for all sessions scheduled in the Medical Education Building, with the following exceptions:

- Sessions that contain educational materials that are not personally authored or created by SOM faculty (”Third Party Content”) and are not covered under Fair Use
- Sessions that disclose private healthcare information protected by HIPPA.
- Sessions in which students may engage in discussions over ethical matters in a confidential setting, to protect student privacy for example, Ethics sessions.
- Team based learning activities

Information on whether a session will or will not be podcast should be included in the session’s instruction file (see Appendix 1). For sessions not being podcasted, the reason must be indicated.

Changes in recording preference can be made through Oasis. The recorded sessions are available to all students enrolled in the system and can be accessed through the Student Source immediately after the session. Any recording time length can be accommodated for the podcasts. For example, following the Oasis schedule, recordings could be scheduled for instance from 8:10 - 9:20, 9:30 - 10:00, and then 10:10-11:00. The only limit
imposed for scheduling is that there needs to be a 10 minute gap between recorded events, for we actually record 8 minutes after the scheduled ending, and start 2 minutes before the scheduled start time.

iii. Practice questions

A **minimum** of 25 practice questions (equivalent to 5 questions per day of new content) must be provided for every curricular week. The number of practice questions can be proportionally reduced for weeks with substantial numbers of review activities.

All practice questions should reflect the style and difficulty of those used in summative exams (see below), should be keyed to the learning objective(s) they assess, and should provide immediate and detailed feedback on right and wrong answer choices.

Questions that do not reflect those used on summative exams may be made available to students, but to avoid confusion, these should be clearly labeled "Study Aids," not "Practice Questions."

iv. Distribution of teaching materials

Teaching materials are distributed to the students exclusively through the [Student Source](#). Teaching materials can be posted under Handouts, Presentations, Links, Practice Questions, Study Aids, and Podcasts. Every activity must have a file containing instructions that explain what the student must prepare, what resources are being made available, what deadlines may apply, and whether there is a graded component that will be assessed. Such activities that contain a graded component will be denoted by an asterisk in the title for quick and easy identification by the students. (see template in Appendix 1). Such a file is created through X-CREDiT and is posted to the Student Source in the Handouts section.

All teaching materials for the upcoming week must be posted by 5 p.m. Wednesday of the prior week.

All materials posted to the School of Medicine’s Learning Management System must comply with the [Policy on the Digital Teaching and Learning Environment](#).

Students can refer to the “Week at a Glance” document generated by Student Source. Always check this document in order to confirm that the data has been entered correctly, since students use it as their weekly planner. (For an example, see Appendix 2).
III. Assessments

The Assessment Committee is responsible to the Curriculum Committee for the overall assessment philosophy for the NxGen Curriculum and establishes guidelines and standards for assessment throughout the four years. The committee ensures that reliable and valid assessment methods are used to assess the knowledge, skills, and attitudinal/behavioral domains. The membership is expertise based, without specific term assignment, and currently includes:

Director of Assessment, Chair  
Associate Dean for Curriculum  
Senior Associate Dean for Education  
Senior Advisor for Medical Education Affairs  
Director of Clinical Performance Development  
Three faculty members with experience in assessment

i. Types and Distributions of Assessments

The goal of assessment is to provide fair, accurate, consistent, and efficient measures of student progress and achievement. Assessments can be conducted by a variety of means and are not limited by format. If an activity is designed primarily to give a measure of student achievement, it should be coded as “Assessment,” regardless of the format (i.e. Simulation, SP, Patient Presentation, OSCE, MCQ, etc.)

- **Formative assessment**: Formative assessments are designed primarily to give the students a sense of their progress toward achievement of learning objectives. As such, they are given appropriate weight in grading (see section III. Assessment and Grading).

- **Summative assessment**: Summative assessments provide information to students as to whether learning objectives were achieved, and information to faculty regarding the extent of student mastery.

The grade for each system will be derived as follows:

- 60% summative assessment(s)
- 40% formative assessments

**AAMC Assessment Terminology for Pre-Clerkship Phase NxGen Curriculum**: (May be Formative or Summative):

1. **Exam - Institutionally Developed, Clinical Performance**: Practical performance-based examination developed internally to assess problem solving, clinical reasoning, decision making, and/or communication skills (Includes observation of learner or small group by instructor).

   Synonymous with/Includes: OSCE; Virtual Patient; Practical Exam; Internal (practical) Exam; Image Analysis; Script Concordance; Simulation Exam; MiniCEX; CEX; SCEE (Simulated Clinical Encounter Examination).

2. **Exam – Institutionally Developed, Laboratory Practical (Lab)**: Examination activities that use hands-on or simulated exercises in which students collect or use data to test and/or verify hypotheses or to address questions about principles and/or phenomena.

   Synonymous with/Includes: Laboratory Practicum; Anatomy Practical.

3. **Exam - Institutionally Developed, Written/ Computer-based**: Examination utilizing various written
question-and-answer formats (multiple-choice, short answer, essay, etc.) which may assess learners’ factual knowledge retention; application of knowledge, concepts, and principles; problem-solving acumen; and clinical reasoning.

Synonymous with/Includes: Written Exam; Internal (written) Exam; MCQ; Multiple Choice; Quiz; Script Concordance.

4. **Exam - Licensure, Written/ Computer-based**: Standardized written examination administered to assess learners’ factual knowledge retention; application of knowledge, concepts, and principles; problem-solving acumen; and clinical reasoning, for licensure to practice in a given jurisdiction (e.g., USMLE for the United States); typically paired with a clinical performance component; may also be used by schools or learners themselves to assess achievement of certain curricular objectives.

Synonymous with/Includes: USMLE Step 1; USMLE Step 2-CK; COMLEX Level 1; COMLEX Level 2- CE; COMLEX Level 3; MCC Part I; CEFM

5. **Exam - Licensure, Clinical Performance**: Practical, performance-based examination developed by a professional licensing body to assess clinical skills such as problem solving, clinical reasoning, decision making, and communication, for licensure to practice in a given jurisdiction (e.g., USMLE for the United States); typically paired with a written/computer-based component; may also be used by schools to assess learners’ achievement of certain curricular objectives.

Synonymous with/Includes: USMLE Step 2-CS, COMLEX Level 2-PE; MCC Part II; CEFM.

6. **Narrative Assessment**: An instructor’s or observer’s written subjective assessment of a learner’s work or performance.

May Include: Comments within larger assessment; Observation of learner or small group by instructor. Does not include: Clinical Documentation Review; Clinical Performance Rating/Checklist; Peer Assessment; Self-Assessment.

7. **Oral Patient Presentation**: The presentation of clinical case (patient) findings, history and physical, differential diagnosis, treatment plan, etc., by a learner to an instructor or small group, and subsequent discussion with the instructor and/or small group for the purposes of learner demonstrating skills in clinical reasoning, problem-solving, etc.

8. **Peer Assessment**: The concurrent or retrospective review by learners of the quality and efficiency of practices or services ordered or performed by fellow learners.

Does not include: Multisource Assessment; Narrative Assessment.

Course time scheduled for assessment will be excluded from calculations of active learning.

**a. Summative Assessment**

Summative assessments are designed to allow students to demonstrate mastery of the material upon completion of a system. Each summative exam consists of 90-120 USMLE-style questions (30 questions per week being assessed) and is administered over the weekend, allowing approximately 1.5 minutes per question for completion of the assessment. Exams generally open Friday at 12 PM and remain open until Sunday 1PM. If
there are no sessions scheduled for Friday, exam may open at 8am. Systems longer than 3-4 weeks may have more than one summative exam, as indicated in the table on page 3.

New material may be introduced on Fridays before summative exams, but not tested on that exam. System Leaders may choose to leave the Friday before a summative exam open for independent study, or schedule review sessions or sessions requiring no assessment on the summative assessment. It is permissible to schedule sessions with their own assessment component on these days, e.g., TBLs or Labs that have a practical assessment. While you can have a TBL on these days, you cannot, however, test the LOs of the TBL on the summative.

NxGen policy requires that 10-15% of each summative assessment test material from prior parts of the UME curriculum. Retrospective items must be relevant to the materials covered by the system and need not be referenced in an activity's instruction sheet. System Leaders should strive for broad based questions when testing review material. Note that X-CREDiT allows instructors to recall learning objectives from previous activities as review learning objectives for their activities. Such review learning objectives appear on the instruction sheet and are linked to the corresponding teaching materials in the Student Source. Although instructors are not required to reference learning objectives for retrospective items they should utilize this X-CREDiT function to specifically direct students to review important relevant materials. All retrospective/review questions must be labeled with keywords and be linked to a learning objective to allow for easy retrieval of retrospective questions and to facilitate assessment review.

The ratio between first order, second order, and clinical questions should evolve over the course of the pre-clerkship phase. At the beginning, the ratio is expected to be 20:60:20 whereas, by the end, it should progress to 10:40:50.

Anchor Point Ratios for question complexity (first order: second order: clinical):

- Beginning of Pre-clerkship Phase with Foundations of Medicine—20:60:20
- Middle of Pre-clerkship Phase with Mind, Brain and Behavior—10:50:40
- End of Pre-clerkship Phase - Hematology—10:40:50

Note that current SOM policies as of June, 2017, require students to achieve at least 70% on each summative examination. Students achieving less than 70% will be referred to the ASA Committee and will have to take a make-up examination. The reexamination grade will be an additional grade factored into their cumulative total (see current year Grading policy and Policy on Academic and Professional Advancement for questions surrounding grading).

The make-up examinations should be similar in content to the original examination.

b. Formative Assessment

Formative assessments are designed to give students frequent feedback on their individual learning - the emphasis is on learning, not on grades, so no one activity should be worth too much.

The formative score will be calculated by the addition of scores from:

1. A mid-system/mid-module or weekly formative assessment
2. A variety of activities, distributed equally among the system’s weeks

The mid-system/mid-module formative assessment should account for no less than 8% and no more than 10% of the assessment period’s grade. This formative exam should consist of approximately 20 USMLE-style
questions per week being assessed and administered over the weekend, allowing 1.5 minutes per question for completion of the assessment. Systems longer than 3-4 weeks should have a formative exam for each module when possible. New material introduced on Friday before formative exams may be tested on that exam, but System Leaders should exercise care and avoid testing complex material. Such material can be tested on the summative.

The ratio between first order, second order, and clinical questions should be similar to that of summatives. See previous section.

All formative questions should be worth no more than the value of a summative question for the corresponding summative period.

2. **Other formative activities** administered throughout the system account for 40% of each assessment period’s grade. These formative activities can assess student preparation for an activity, their application of knowledge, or their mastery of materials following the session.

**Assessment of student preparation:**
- Individual Readiness Assessment Test or iRAT (done as part of a TBL)
- Group Readiness Assessment Test or gRAT (done as part of a TBL)
- Pre-class quiz/ In-class quiz (beginning of class)

**Assessment of knowledge application:** Grades derived from worksheets, laboratory reports, problems sets, etc. must have a rubric of expected answers. Each assessment element (knowledge, skill or behavior) must be linked to a learning objective. The work of a group can be a component of a grade, but should be combined with an individual student component.
- Graded worksheet
- Graded problem set
- Graded lab report
- Grade derived from TBL peer evaluation

**Status of progress towards mastery of materials:**
- Retrospective quiz (administered at the end of class time or outside of class time). Such quizzes could include thread-based quizzes, i.e., pharmacology questions that build on knowledge through the systems.
- Mock formative. 15-20 questions. High level, formative assessment INTEGRATING content throughout the week.
- Open book questions. Although open book questions can be an effective assessment method, effective implementation requires instructor training. Open book questions can be given to students as an ungraded formative assessment. Graded open book assessments need to be reviewed and approved by the Curriculum Committee (Assessment Sub-committee).

**Assessment of teamwork skills:**
- Students can request that other members of their team who demonstrate poor teamwork receive a reduction in the grade earned for the TBL. This will be accomplished by multiplying the earned TBL score by a value for the Peer Contribution Scaler that is less than 1.0. A request to reduce a teammate’s grade must be submitted by 5 p.m. on the day of the TBL, include a written justification, and be approved by the TBLEG.

Each formative activity contributes only a small amount to the total grade, yet encourages students to stay engaged and current with the material. System Leaders have flexibility regarding how many formative activities they have and how much each of the activities is worth. In general, no single formative activity should be worth
more than 5% of the assessment period’s grade.

• “Big” activities that integrate a number of sessions and require application of knowledge should take place about once per week and each should be worth 3-5% of the module’s grade. Examples: TBL, small or large group problem sets.

• For sessions that do require advance preparation on the part of the students, it is recommended that the quiz be comprised of questions taken straight out of the pre-class preparation. These may be completed the night before or at the beginning of the session.

• Retrospective quizzes provide students a valuable review prior to the summative assessment. Such quizzes should be composed of higher-level learning questions.

• TBL grades are determined as the sum of the iRAT, gRAT, and TASC points for a session, multiplied by the Peer Contribution Scaler. (The default value of the Peer Contribution Scaler is 1.0; however this can be reduced if requested, see below.) Each successive class determines the values of the iRAT, gRAT, and TASC points during Orientation. For smd18 the grade has been determined as follows: IRAT = 35%, GRAT =50%, TASC =15%. Note: The TASC component of the TBL score will be awarded only if the GAE Worksheet is completed and submitted properly and if ALL members of the team submit their Team Debriefing Tool (of the correct TBL team!) by the deadline.

Recall that, per student policies, there is no make-up for formative activities and more specifically for weekend formative assessments that comprise less than 8% of a final grade.

Under no circumstance are grades to be derived purely from attendance.

ii. General guidelines for summative assessment item construction

Summative assessments are used to evaluate student-learning outcomes. It is, therefore, essential for summative assessment items to sample learning objectives, including as many high level (application, analysis, and evaluation) questions as appropriate for the student’s level of learning. Assessments should not be solely centered on a given organ system, but rather include items that integrate concepts across disciplines and systems. Assessment of students should reflect the emphasis on clinical relevance, integration, and on application, analysis, and evaluation.

• All summative questions should individually be worth more than any single formative question.

• Test items should specifically assess learning objectives, e.g., questions should be representative of the knowledge, skills, or behaviors expected of the student. One assessment item can cover more than one learning objective, particularly when items are analysis- or evaluation- level.

• All questions should be written in USMLE-style as clinical or experimental vignettes. Test items should be "one-best answer" multiple-choice questions.

• Test items should have accompanying feedback, explaining why one answer is correct/the best answer and why other answers are not correct/the best answer.

• Assessments must include items that integrate concepts across disciplines and systems. SOM policy requires that 10-15% of each summative assessment tests material from prior parts of the UMI curriculum. System Leaders are encouraged to increase the Bloom’s taxonomy level at which review materials are presented and assessed by integrating it to new content and building on prior knowledge.

• At least 50% of questions within a given assessment should assess learning objectives within higher Bloom's taxonomies, i.e. comprehension or above. Ultimately, the objective is to have no more than 30% of questions within a given assessment assessing factual recall.
The faculty are directed to the USMLE website guide to writing test questions: 

Some general tips include:
- Make sure the item can be answered without looking at the options.
- Include as much of the item as possible in the stem.
- Avoid superfluous information, “tricky” and overly complex items.
- Write options that are grammatically consistent and logically compatible with the stem; list them in logical or alphabetical order. Write distractors that are plausible and the same relative length as the answer.
- Avoid using absolutes such as always, never, and all in the options; also avoid using vague terms such as: usually and frequently.
- DO NOT use negatively phrased items (e.g., those with except or not in the lead-in).
- DO NOT include “all of the above” or “none of the above” as answer choices.
- Ask, “In what kind of situation do I expect students to need or be able to use this knowledge” and then create a question or problem that replicates this real-life context as closely as possible.
- Focus on important concepts; don’t waste time testing trivial facts.

iii. Review of assessments

a. Prior to the administration of weekend assessments

An assessment review group will review both the formative and summative assessments accounting for 8% or more of a module grade. The System Leader is in charge of recruiting the assessment review group and chairing the review sessions.

b. Following the closing of a weekend assessment

Assessment items must be reviewed by the System Leaders and the Assessment Specialist within two days following the assessment closure and before the final points are assigned.

Summative Assessment grades must be posted through Oasis one day after the post-assessment review, unless there is a holiday during this period of time, in which case grades need to be posted on the first day on which classes resume.

Formative assessment grades will be posted within three business days of the quiz closing.

iv. Administering of assessments

a. Scheduling

Weekend formative and summative assessments are administered through the Online Testing Center. Assessments must be open for login on Friday at 12 noon and close for login Sunday at 1 pm. There is a predetermined time window after login to take and finish the exam (exam duration). It is recommended that students be allowed 1.5 minutes per question.
b. Location

Weekend formative exams can be taken anywhere. Summative exams must be taken in the Health Sciences Library or the Medical Education Building.

c. Challenges

Students are allowed to challenge question used in summative assessments. Challenges guidelines are as follows:

- Students may challenge a maximum of three questions per exam.
- Challenges will be accepted through the online testing system.
- Students will have 30 minutes after completing the exam to submit their challenges.
- Students will not be given answers or scores before they submit their challenges.

d. Feedback and review

Feedback can be configured independently for each assessment, and independent of the challenge feature. There are three options for faculty: no feedback, feedback only on missed questions, and feedback for all questions. The feedback can be displayed immediately after a student completes the exam, (Feedback Availability: Immediate Feedback), and there is the option to not display feedback (Feedback Availability: None). When the immediate feedback option is chosen, feedback will be made available to the students until the end of the system for formative assessments, and for one week after the final grades have been made available to students for summative assessments.

**Formative Assessment Policy**

- Challenge questions: Not allowed
- Immediate Feedback: Immediate feedback for all questions
- Final Feedback: Show feedback for all questions, viewable until the end of the system, as many times as desired.

**Summative Assessment Policy**

- Challenge questions: Allowed
- Immediate Feedback: Immediate feedback on missed questions, viewable for one week following the exam closing, as many times as desired.
- Final Feedback: Show feedback for missed questions

**Important considerations:** If an exam is reopened, for example, for a student who did not take the exam initially, this will extend the period in which feedback is viewable, since the close date of the exam has been extended.

e. Student use of assessment questions

- Students may not discuss exam items with other students or with faculty while the exam is still open.
- After the exam closes, students may discuss the items, but they may not disseminate the items in any form. Students should be reminded that, not infrequently, there are students who have not yet taken the exam because of illness.
IV. Communication with students

Communication with students is an essential part of the administrative duties of a System Leader. Throughout a system, System Leaders are expected to:

- Be present at the overwhelming majority of sessions in order to provide clinical continuity and answer student questions.
- Ensure that students receive prompt replies to queries and/or requests, providing individual guidance to students by direct contact or electronic means (email discussion forum, etc.).
- Send out reminders about important deadlines and any special instructions for their work. At a minimum, such communications should include:

  - One week before the system starts, pertinent information should be made available to students through Oasis and Student Source (to include the following items)
  - Distribute the final schedule for the upcoming week(s).
  - Post grading rubric, indicating all graded assignments (pre- or post-class problem sets, cases, quizzes, etc.) with deadline for completion and their associated grade percent.
  - Post required books for the system
  - Distribute student groupings for any group activities.
  - As needed, inform the students of any changes in the schedule, updated materials or newly posted materials, release of assessment grades, etc.

V. Role of Pre-Clerkship System Leaders

i. General Responsibilities of the Pre-clerkship System Leaders

Pre-clerkship Leaders are in charge of a designated course (Clinical Performance Development; Social Issues in Medicine; Molecular and Cellular Medicine) or any System-based courses. They establish the goals, learning objectives, and teaching and learning methods for each course under the direction of the Curriculum Committee. Pre-clerkship Leaders operate and administer oversight with the Curriculum Committee, and are charged with actively supporting curricular innovation, improvement, and evaluation.

ii. Specific Responsibilities of the Pre-Clerkship System Leaders

A. Course or System Design. In collaboration with the Pre-clerkship Committee and with the approval of the Curriculum Committee, the Pre-clerkship Leaders will

  a. Determine the content and learning objectives (knowledge, skills, behavior)
  b. Select appropriate learning methods and design, or, collaborate on the design of specific learning sessions.
  c. Develop appropriate assessment activities (in collaboration with Content Thread Leaders)
     i. solicit and/or write assessment material, e.g. MCQ, clinical vignettes, one-minute papers, etc. from teaching faculty
     ii. organize assessment team to vet, grade, and review questions
     iii. determine the schedule and location of structured learning and assessment activities consistent with guidelines established by the curriculum committee
  d. Liaise with leadership and faculty in the Clinical Performance Development experience to ensure robust integration of basic and clinical sciences and clinical skill development

B. Course Administration. Pre-clerkship Leaders will perform all duties necessary for the course or system operation and will

  a. Coordinate structured learning activities including laboratories and extramural sites
  b. Monitor and evaluate activities and provide reports on student performance and program effectiveness
c. Provide daily oversight. One System Leader must be present the overwhelming majority of time during the run of the System (typically 8am-12 noon) to provide clinical continuity and answer student questions.
d. Oversee administration of in class assessment activities
e. Prepare summative student evaluations and grades (including narrative evaluations, contributing to portfolios, etc. as appropriate)
f. Identify students with academic, professional, or other problems and report to college deans
g. Oversee maintenance of a course or system website and ensure content and resources are posted in accordance with SOM recording and storage policies
h. Discuss the course or system with a student advisory committee
i. Identify, recruit, and mentor course or system faculty
j. Evaluate faculty teaching within the course or system
k. Recommend and encourage faculty development training programs

C. Leadership and Service. Course or System Leaders will
a. Lead and cultivate the designated course or system community
b. Serve on the Pre-clerkship Committee and attend monthly meetings to work with other Pre-clerkship Leaders to integrate and coordinate the curriculum. In this capacity, you must attend a minimum of 80% of the Pre-clerkship Committee meetings per year.
c. If requested by the Dean, serve on committees in the SOM
d. Collaborate with the Curriculum Evaluation Community to evaluate the processes and outcomes of the course or system

Qualifications. Pre-clerkship Leaders must have a clear understanding of the goals of the medical curriculum as well as individual course, segment, and thread objectives. Pre-clerkship Leaders are selected by the Curriculum Committee with the support of the Chair when appropriate and should be full-time School of Medicine faculty members with one or more doctoral degrees.

Work Activity Guidelines. Pre-clerkship Leaders will work within these general guidelines:
1. Pre-clerkship Leaders report to the Pre-clerkship Committee and the Curriculum Committee.
2. Pre-clerkship Leaders are evaluated by the Curriculum Committee.
3. Pre-clerkship Leaders will receive salary support commensurate with the length of the educational unit. Failure to meet the minimum standards as described above may necessitate a reduction in salary support.
4. An Instructional Support Staff member will be assigned to every course.
5. Education support for development of audiovisual materials, computerized instructional materials, and web sites will be provided.
6. Funds for copying, supplies, etc. will be provided from the Central Education Administration.
7. The Pre-clerkship Committee will provide
   a. Communication among the Systems and Threads
   b. Coordination as to sequence, length, vacations, examination placement
   c. Mediation of disputes between Pre-clerkship Leaders and Content Leaders over system unit content
VI. Role of thread leaders

i. General Responsibilities of the Thread Leaders
The Content Thread Leader(s) will work with the system and clerkship leadership to establish the goals, learning objectives, and teaching and learning methods for their subject discipline through the medical curriculum. They will aid in the operation and administration of their discipline components and are charged with actively supporting curricular innovation and improvement, and with providing content material that will make the unit succeed in its aims.

All Content Thread Leaders should be in close communication with the Pre-Clerkship System Leaders. It is the Content Thread Leaders’ responsibility to consult with course, system, and clerkship leadership regarding appropriate material for medical students, and in the process of deciding when and where the content will be presented.

ii. Specific Responsibilities of the Thread Leaders
Content Thread Leader(s) will:

a. Monitor and evaluate the delivery of subject material across the continuum of curriculum (ensure the orderly sequence knowledge/skills/behaviors)
b. Advise the Curriculum Committee
c. Assist with preparation of student evaluations for their particular subject discipline
d. Provide guidance to students in their particular subject discipline
e. Liaise with Clerkship Directors to devise methods to integrate the basic science disciplines into the clerkship and elective programs

Content Thread Leader(s) will assist all Pre-Clerkship System Leaders by helping them to:

a. Determine the content and learning objectives of their subject discipline
b. Select appropriate learning methods
c. Develop appropriate assessment activities
   - gather appropriate assessment material e.g. MCQ, clinical vignettes, one-minute papers, etc. from teaching faculty
   - develop a remediation plan for their subject discipline
d. Determine the schedule and location of structured learning and assessment activities for the unit
e. Identify faculty for structured learning activities based on expertise and teaching ability
f. Design faculty development activities

Content Thread Leader(s) will:

a. Actively contribute and participate in the pre-Clerkship systems educational communities
b. Liaison with other Content Thread Leaders to insure robust integration between the subject disciplines
c. Collaborate with the Curriculum Evaluation Committee to evaluate the processes and outcomes of the subject discipline thread through the preclinical and clinical years
d. Represent the university in regional and national medical education

VII. Role of instructional faculty

i. Faculty Development

There are three series within faculty development opportunities that are related to medical education/the NxGen Curriculum.
To see a course listing within each of these series, as well as materials from past sessions, please visit the pages below:

- Excellence in Medical Education Faculty Development Certificate Series
- Medical Education Grand Rounds
- NxGen Journal Club Meetings

To register for any of these sessions, please visit the registration page at the above individual websites. For questions, please contact Ashley Ayers: ala5t@virginia.edu or (434) 924-8497.

Weichao (Vera) Chen, PhD, supports faculty teaching in the NxGen Curriculum. She provides workshops, resources, and consultation. Topics include development of learning objectives, selection of instructional strategies and activities, enhancement of the content presentation, and review of instructional design based on student feedback. She also works with faculty engaging in the research of medical education.

Deborah Barry, PhD, provides consultations regarding curricular sequencing, learning objective reviews, and session development. She observes sessions within the NxGen Curriculum to provide feedback to faculty, along with reviewing student evaluation of teaching to guide session development or revision. Additionally, she assists in the design and development of medical education research.

ii. Faculty Evaluation

Instructional faculty are evaluated both formally and informally by students and Pre-Clerkship System Leaders. For the formal evaluations, faculty who teach 4+ hours in a System or across Systems will be evaluated by 25% of the student class, using OASIS. In addition, faculty who teach 4+ hours, or are new, or have substantially changed how/what they teach, or have been identified by System Leaders or Chairs as needing evaluation feedback (i.e., faculty up for promotion), will be discussed at weekly evaluation focus group meetings with students. These sessions are written up and the information is sent for review to Pre-Clerkship System Leaders, the Associate Dean for Curriculum, and to the specific faculty evaluated.

For the informal evaluations, Pre-Clerkship System Leaders observe all of the morning sessions and provide feedback to instructional faculty. Students may also e-mail the Director of Curriculum Evaluation with faculty specific feedback. This information is de-identified, and then sent to the Pre-Clerkship System Leader and the individual faculty.

Automatic alerts are sent via OASIS on a quarterly basis to remind faculty to review their available evaluations.

The faculty are evaluated in the context of the NxGen Curriculum Goals:

1. Assure all graduates demonstrate mastery of the 12 UVA School of Medicine Competencies required of the Contemporary Physician
2. Integrate content around the organ systems
3. Integrate clinical and basic science content across the four years and within systems
4. Utilize more active learning methodologies and provide a learner-centered curriculum
5. Provide frequent and developmental opportunities for clinical skill learning throughout the curriculum
VIII. College System

i. Description of the College System

Student support services are structured into four colleges. Each is headed by a student affairs dean who works with individual students and the college as a whole to provide career counseling, address personal well-being, oversee academic progress, identify professionalism concerns, and advocate for students in all aspects of their medical education. The deans organize and oversee major events and transitions. They place the white coats on their students during the first week of medical school and hood the students in their college at graduation.

In our “Next Generation” curriculum, we have committed to a four-year course of Clinical Performance Development (CPD). In the first 18 months, six-member student groups meet weekly with two mentors, one physician and one non-physician, in order to learn fundamental clinical skills, interview and examine patients, and work through cases together. We have laid the foundation for our hybrid learning communities by forming each college from 6 or 7 of these small groups. In this way, the small group mentors become college affiliated faculty and are encouraged to identify and communicate concerns directly to the Deans, thereby providing broader support for students as well as longitudinal oversight of each student’s clinical development.

Each college rotates through the clerkship year on the same schedule. This facilitates group and individual meetings with the Deans, allows delivery of a cohesive clerkship year curriculum to be learned within the CPD groups, simplifies faculty feedback to the Deans, and enhances supervision of clinical skill development by the CPD mentors. In addition, students continue their relationships with their peers as they function together in patient care settings.

In the post-clerkship period, the CPD mentors continue to monitor professional and skill development and are integral to the educational process as we address competencies and entrustable professional activities (EPAs) of students. The Deans and CPD mentors together work with students to address any concerns.

ii. Leadership

Associate Dean for Admissions and Student Affairs, Dean of Hunter College: John Densmore MD, PhD
Assistant Dean for Student Affairs, Dean of Reed College: Sean Reed MD
Assistant Dean for Student Affairs, Dean of Dunglison College: Meg Keeley MD
Assistant Dean for Student Affairs, Dean of Pinn College: Christine Peterson MD

iii. Professionalism

Professional attitudes and behaviors are components of the 12 Competencies Required of the Contemporary Physician that enable the independent performance of the responsibilities of a physician and, therefore, are a requirement for the successful award of the degree of Doctor of Medicine. The School of Medicine’s Professionalism Objectives establish general standards applicable to all students in the School of Medicine. However, it is the responsibility of the faculty and the ASAC, as appropriate, to interpret and apply the general Professionalism Objectives to specific situations in which concerns are raised about student performance.

Evaluation of professional attitudes and behaviors is an integral part of a student’s assessment and generally is accomplished through observation and narrative recording. “Praise/Concern” Cards and written narratives are
assessment tools used to describe behaviors in areas of altruism, honesty and integrity, caring, compassion and communication, respect for others, respect for differences, responsibility and accountability, excellence and scholarship, leadership, knowledge, and other skills related to professionalism. These professional attitudes and behaviors are monitored and recorded throughout undergraduate medical education.

Any breach of professionalism resulting in a recorded observation, e.g., Professionalism Concern Card, letter, written report, etc., must be addressed with the student by his/her College Dean and documentation of the discussion must be recorded. If a student receives three or more written observations of concern or is cited for a single egregious breach of professionalism, notice will be sent to the ASAC for review. A student identified as having a pattern of unprofessional behavior may be directed to further counseling and/or to supportive remediation and/or placed on academic probation. If the professional violations are severe, a student may be dismissed from school even if he/she has passing grades in all courses. The ASAC will assess the severity of the problem, the management and the consequences, including possibly reporting the behaviors in the student’s Medical Student Performance Evaluation (MSPE). Egregious behaviors, e.g., assault on or threat to a patient, patient’s family member, student, GME trainee or faculty member, conduct that may constitute a felony, etc., regardless of whether criminal prosecutions are initiated or pursued, will be referred immediately to the ASAC, irrespective of whether previous observations of concern exist, with the recommendation for dismissal from school.

iv. Academic Standards and Achievement Committee

The Academic Standards and Achievement Committee (ASAC) oversees, monitors and enforces educational and professionalism standards in the School of Medicine. All academic deficiencies, patterns of unprofessional behavior and egregious violations of professionalism are referred to the Academic Standards and Achievement Committee (ASAC) that acts on behalf of the faculty of the School of Medicine. Recommendations, based on the severity and persistence of these activities or behaviors, can result in a broad range of actions from remediation to dismissal from the university. The committee follows the guidance of the Policy on Academic and Professional Advancement and the Policy on Technical Standards Required for Matriculation, Progression and Graduation.

For more information about ASAC procedures for handling academic deficiencies, please visit the page below:

Academic Standards and Achievement Committee Operating Procedures

v. Support services

Student Academic Enhancement Services

Provides assistance to students having academic difficulty during the curriculum. Students may be referred due to low performance on objective measures such as assessments or by interview with College Deans or other faculty. Academic Enhancement Services are aligned with the goals of the NxGen curriculum and strategic vision for the school of medicine in order to enhance the educational mission and development new educational leaders of the future. The goal of this service is to effect early intervention, prior to failing summative exams, systems, clerkships, or board examinations.
**Student Disability Access Center**

The Student Disability Access Center (SDAC) is the University of Virginia’s designated access agency for students with disabilities. SDAC’s primary role is to determine eligibility and to provide reasonable academic accommodations for students with disabilities in line with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Amendments Acts of 2008 to provide equal access to students with disabilities who are "otherwise qualified" to meet the essential demands of the academic program. The SDAC provides services to students who have been previously diagnosed with a disability, as well as those who have never been diagnosed, but find themselves struggling academically, and who seek advice and support on their difficulties.

**Counseling and Psychological Services**

The UVa Department of Student Health, Harrison Bowne "Tersh" Smith Jr., Memorial Center for Counseling and Psychological Services (CAPS) is the University of Virginia’s primary student counseling clinic. The mission of CAPS is to be responsive to the mental health needs of UVa students and to provide consultation, education, outreach, and crisis management to the broader university community.
IX. Appendixes

i. Appendix 1: X-CREDiT Instructions template

<table>
<thead>
<tr>
<th>X System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curricular Week # - System Week #: Weekly theme</td>
</tr>
<tr>
<td>Session Title</td>
</tr>
<tr>
<td>Instructor, MD/PhD</td>
</tr>
<tr>
<td>Day of week, Month &amp; # , 2012</td>
</tr>
<tr>
<td>Activity type:</td>
</tr>
</tbody>
</table>

The information below will be copied into the X-CREDiT Instructions box. Instructors are to choose the statements that apply to their session and delete all others. Organization of the template, font style and size are not to be changed.

PRE-CLASS PREPARATION

Required:

Recommended:

The PowerPoint slides used in this activity will be made available on the system’s website in advance of the session. The PowerPoint slides used in this activity will be made available on the system’s website immediately following the session. A pre-class version of the slides will be posted ahead of the session.

ATTENDANCE

Attendance to this activity is not required.
Attendance to this activity is not required but will be monitored.
Attendance to this activity IS REQUIRED.
There will be a patient present for part of the class. Please wear your white coat and dress professionally.

SEATING ASSIGNMENT

None
Yes – assigned groups are posted on the system website

ASSESSMENTS

There is a pre-class online quiz associated with this activity. Please see the pre-class instructions.
There will be an in-class quiz, accounting for x% of the system’s/summative period’s grade.
There will be an in-class formative activity accounting for x% of the system’s/summative period’s grade.
There is a post-class formative assignment, accounting for x% of the system's/summative period’s grade. This activity does not have an in-class graded assessment.
Learning objectives for this session will be assessed in the formative and summative assessments. Learning objectives for this session will be assessed in the summative assessment.

POST-CLASS ASSIGNMENTS

[Any information you wish to provide about post-class assignments]
It is recommended that after reviewing all teaching resources you answer the practice questions on the course website (part of the week # practice set).

**INFORMATION ABOUT THE SESSION**

[Any information you wish to provide about the session]

This session will be Podcasted
This session will not be podcasted because it contains educational materials *that are not personally authored or created by SOM faculty and therefore not authorized for redistribution.*
This session will not be podcasted because it discloses *private healthcare information protected by HIPA.*

Make sure that you have fulfilled the Learning Objectives and understand the material. If you have questions please post them to the appropriate section of the discussion forum. If needed you can contact the Office of Medical Education – 924-1681.

*Additional information to be entered into X-CREDiT. A feature that maps individual LOs to threads is under development and should be completed very soon. It will make it possible to pull all the LOs for a given thread (which currently cannot be done) but will generate additional work when entering materials in X-CREDiT. A list of threads as they appear in X-CREDiT is provided in the next page.*

**LEARNING OBJECTIVES**

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Thread</th>
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**REVIEW LEARNING OBJECTIVES (from earlier in the curriculum)**

LOs already entered into X-CREDiT can be recalled into a session as review objectives. A link to the teaching materials for the recalled LO will be automatically generated and included in the instruction’s sheet. We strongly encourage you to identify materials the students would benefit from reviewing prior to your session. System Leaders can help you find review learning objectives.

The following page shows the keyword index for use in XCREDiT.
http://www.med-ed.virginia.edu/CourseSites/xcreditkeywords.cfm

After selecting the appropriate keywords for your session, click the button that states “Selection completed. List selections”. Then, copy and paste following keywords and keywords IDs to your document.
## II. Appendix 2: Week at a Glance

### March 14 - March 18, 2016 - Week 5 / Curricular Week 32

**(Approved Sessions)**

<table>
<thead>
<tr>
<th>Mon 03/14</th>
<th>Tue 03/15</th>
<th>Wed 03/16</th>
<th>Thu 03/17</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI/POT Case* (Lab) 8:10-10:00</td>
<td>Pathology Lab 2 (Large Group Discussion) 8:10-9:00</td>
<td>Clinical Approach to Pancreatic-Biliary Disorders (Clinical Case Presentation: Engagement) 8:10-9:30</td>
<td>Patient Presentation 4 (Patient Presentation) 8:10-9:00</td>
<td>N/A</td>
</tr>
<tr>
<td>Digestive Gland Histology Virtual Microscopy Lab* (Lab) 8:10-10:00</td>
<td>Clinical Anatomy &amp; Imaging Lab 8:10-10:30</td>
<td>TBL: GI Case Review* (Team-Based Learning) 9:00-12:00</td>
<td>Physiology: CF - GI Cases (Lecture) 9:10-10:00</td>
<td>Pathology: Review GI Malignancy (Large Group Discussion) 10:10-11:00</td>
</tr>
<tr>
<td>PRE-CLASS PREPARATION</td>
<td>Pathology Lab 2 (Large Group Discussion) 8:10-9:00</td>
<td>TBL: GI Case Review* (Team-Based Learning) 9:00-12:00</td>
<td>GI Review Session (Review) 11:10-12:00</td>
<td>Nothing Required</td>
</tr>
</tbody>
</table>

### GI/POT Case*

Review the materials and learning objectives from the Liver and Pancreaticobiliary sessions.

Complete the Pancreatic Pathology PBL session. Although this content will not be covered in the in-class assessment, you will be examined on some topics during the lab session.

### Digestive Gland Histology Virtual Microscopy Lab*

As a pre-class preparation for this lab exercise, you should look at the reading materials and any assessments provided by Dr. Keller background for the sessions:

- Liver Histology and Physiology March 7
- Pancreatic Histology and Physiology March 11

Review the handout on the liver and review it before the lab.

Review the following parameters:

- Bring your laptop computer to the Virtual Lab session in the Learning Studio.
- Ensure that your laptop computer has access to Virtual Slides and familiarize yourself with the use of Virtual Slides using the Aurora nScope viewer using this sample slide on pancreas: [http://proxys.med.virginia.edu/DMU/a4v/gn/us_sageslides/jkpaionet/4_414cav.wav](http://proxys.med.virginia.edu/DMU/a4v/gn/us_sageslides/jkpaionet/4_414cav.wav)

### Clinical Anatomy & Imaging Lab

Review and bring handout to class.

**Ungraded** Pre-class quiz in Online Testing Center (will open on Monday at noon, and close Tuesday at 9:00am)

### Clinical Approach to Pancreatic-Biliary Disorders

1. Review the section on Liver Transplantation and Pancreatic Disorders in the Liver Disease Handbook (pp. 30-34).
2. Read the article on *An Introduction to Medical Microscopy & Immunology* (Part 5, Chapter 5: Transplantation, Section on Clinometry)

**TBL: GI Case Review**

1. Review Learning Objectives from the following sessions (see the review LOs section below for specific LOs on which to concentrate):
   - Metabolic Liver Disease
   - End-stage Liver Disease
   - Introduction to GI Physiology
   - Approach to Small Bowel Disorders & Gastrointestinal Bleeding
   - Approach to Lower GI Disease
   - Microbiology: Luminous Bacteria
   - Intestinal Permeability & GI Parasites

2. Review results of the previous [TBL Team Performance Tool](#) (email to your team) and prepare to briefly discuss these results as part of the team.