



TRIED *and* TRUE

The new curriculum makes the grade

BY S. A. UNGER

PHOTOGRAPHY BY MARK MULVILLE



Have you ever wondered what medical school is like today—whether it has changed since you were at UB?

The answer to this question may be simpler than you think: If you graduated more than four years ago, medical school at UB has changed *a lot*.

That's because a new curriculum was introduced in 2001, fundamentally restructuring how students are taught in the first two years. This restructuring has been driven by one overarching goal: to de-emphasize the traditional lecture format in which students are taught the basic sciences within a departmental context (e.g., physiology, biochemistry, microbiology).

Instead, a variety of teaching formats have been introduced that include case presentations, small-group discussions, and other activities aimed at fostering self-directed learning.

These varied formats are in turn used to introduce students to a new organ-based (or system-based) approach to learning that not only integrates basic-science knowledge, but gives this knowledge additional relevance by placing it in a clinical context.

In the first semester of the first year, students are required to take a short preliminary course titled *Medicine and Society: Epidemiology and Biostatistics*, which is a primer on how to interpret clinical data. They then take two “foundation block” modules, which help ground them in basic-science fundamentals. After this, they begin a series of eight organ-based modules of varying length that are taught by teams of basic scientists and clinicians whose efforts are organized by module leaders (see page 13 for a listing of the modules and leaders).

Three courses that remain relatively unchanged in the new curriculum are *Gross Anatomy* and the *Clinical Practice of Medicine I and II*.

CPM I and CPM II, as the latter two courses are known,



Pictured, left to right, are Lauren Gruber, Amanda Gorman, SUNY Distinguished Teaching Professor Emeritus Alexander (Alastair) Brownie, PhD, DSc, and Devon Huff.

Brownie serves as senior faculty advisor on curriculum. In 2003, he received the Dean's Award for his contributions to the development and implementation of the new curriculum.

Pictured on opposite page, left, are Kinnar Bhavsar, left, and Bret Biersbach.

Also on opposite page, far right, is a case presentation in progress, with Alan Saltzman, MD, chair of the Department of Medicine, serving as preceptor.

were introduced in the early 1990s and utilize standardized patients—individuals trained to simulate actual patients—to initially teach students and give them feedback on such skills as history taking, physical examination, and clinical problem solving. In both courses, students also are paired with preceptors (clinicians practicing in the community) whom they work with to further hone their interviewing and diagnostic skills.

All of the modules take place in the morning, leaving afternoons free for independent study, small-group discussions, and the CPM courses, which meet one afternoon a week.

Good Outcomes

Given that the Class of 2005 will be the first to graduate from the new curriculum, it's no surprise that students, faculty and administrators at the school held their collective breath in fall 2004 as scores from Step 1 of the United States Medical Licensing Exam (USMLE) were posted for

the class, providing a preliminary answer to the big question: “Is the new curriculum working?”

According to the board scores, it certainly seems to be.

Results show that the Class of 2005 improved over previous years (albeit, slightly) in two important ways: First, the mean score for the class went up several points; and, second, the percentage of failures dropped. (Admission statistics for the classes, including MCAT scores and grade-point averages, were comparable.)

“This is really good news,” says Frank Schimpfhauser, PhD, assistant dean for medical education, “because at most medical schools that have converted from a traditional to a ‘hybrid’ curriculum—a mixture of lectures and small-group, case-based learning formats—the scores have gone down for a period of time before rebounding.”

Other good news is the fact that several members of the Class of 2005 had scores that

spiked well above the national average.

“The average score around the country on the Step 1 exam is approximately 215. We had more scores over 240 than we’ve ever had,” Schimpfhauser reports.

This past fall, the Step 1 exam scores for the Class of 2006 held to this standard, showing no marked difference over the Class of 2005, with the mean score dropping very slightly.

Other encouraging outcomes for the Class of 2005 were revealed when their scores were broken down by 20 discipline/organ system areas (e.g., cardiovascular, respiratory, renal/urinary).

“Results indicated that our students’ performances rose slightly on most areas and rose significantly on the number of sub-categories above the mean scores for the 17,000 U.S. and Canadian students who took the exam,” says Schimpfhauser.

Yet another positive outcome measurement has been improved scores on UB’s End-of-Third-Year Clinical Skills

Exam, which all students are required to pass for promotion to the fourth year. The one-day exam attempts to mirror the new USMLE Step 2 Clinical Skills (CS) Exam required for licensure.

In the exam, students have a specified amount of time to complete a history and/or physical on a series of 12 standardized patients. Each case includes a 10-minute exercise in

science knowledge, problem solving, communication skills and professionalism, according to Schimpfhauser.

Students in their clerkship years corroborate these results. "The feedback I've heard from attendings and physicians in the community who have had the opportunity to work with my class has been pretty positive so far," says fourth-year student Jeffrey Feiner.

"One of the advantages of the new curriculum," he adds, "is that it integrates things and forces you to think more clinically than academically; it forces you to focus on the whole picture.

"For example, with congestive heart failure, you look at

“*These changes represent the fluidity of the curriculum, and the fluidity is not based on whether or not someone is in town; it’s based on common sense.*”



which the student is required to write a concise patient note that includes significant findings, diagnostic impressions, and a treatment plan.

"The Class of 2005 did extremely well on the exam," says Schimpfhauser, "and we expect they will do very well on the actual CS licensure exam.

"The school has been using preceptors and standardized patients for quite a while now," he adds, "and the programs have been well received by students."

An additional outcome measurement includes a 30-question survey given to third-year faculty, asking them how well they felt students in the Class of 2005 were prepared in six wide-ranging areas. The survey also was given the previous year for the Class of 2004.

Compared to the Class of 2004, scores for the Class of 2005 were higher in each of the six areas, including basic-

the physiology of it, you look at the pathology and you look at the medications you have to treat it, and that's really how you focus on a disease process as a clinician."

Negotiation and Cooperation

While everyone involved with the new curriculum agrees that, for the most part, it is on the right track and needs only some fine-tuning, they also will tell you that getting to this point has demanded an extraordinary effort on the part of students and faculty alike, as well as the support of the school's administration.

Perhaps no one knows this better than SUNY Distinguished Teaching Professor Emeritus Alexander (Alastair) Brownie, PhD, DSc, former chair of the Department of Biochemistry, who serves as senior faculty advisor on curriculum.

In addition to taking part in the several years of planning that led up to the launch of the new curriculum, Brownie attended every lecture during the first two years of the new curriculum. From this unique vantage point, he monitored the progress of the overall effort and became a conduit for reporting specific flaws as they became apparent, as well as gauging how successfully the curriculum was integrating the myriad subjects, presentation formats, exams and grading systems.

Brownie's feedback these past few years is just one aspect of the evaluation process, which is ongoing and involves soliciting student and faculty feedback both formally and informally. These various streams of information are then funneled into monthly meetings of the

new approach, and that made all the difference."

For module leaders, one of the biggest challenges of the new curriculum has been the behind-the-scenes logistical planning that must take place before students even arrive on campus. For example, What will be taught in each module? Who will teach it? Where will the material resources and staff support for the modules come from?

In the old curriculum, Heffner explains, courses were run in an authoritative top-down fashion by department chairs whose budgets covered the costs associated with running the courses, including support staff and material resources. In contrast, the systems modules are multidisciplinary, which means that there is no clearly defined budgetary base, and course planning is done by module leaders who must rely on the cooperation and responsiveness of their fellow faculty members.

"The module leaders are dealing with 20 or so people whom they have to organize through consensus," says Heffner. "Generally, it works out fine, but it's not easy."

One faculty member who is intimately acquainted with



Pictured far left are David Brooks, left, and Anna Buchsbaum.

Near left is Nancy Cronk, coordinator for the first- and second-year curriculum.

Phase I Committee, which is made up of module leaders and student representatives. Ultimately, it is this group that is responsible for overseeing years one and two of the curriculum. In addition, Reid Heffner, MD, professor of pathology, continues in his role as assistant dean for curriculum, a role that extends back to when the new curriculum planning process began in the late 1990s under Dean John Wright, MD.

In looking back at the growing pains the curriculum has undergone, Brownie says it's important to point out that the concept of the new curriculum as envisioned by the planning committee was implemented and functioned in a remarkably successful way from the outset.

"During the first semester, which was the critical one, it functioned; it worked," he says. "Yes, it had its problems, but basically it got off to a really good start, especially given the fact that no additional resources were provided to assure its success. But the faculty were committed to the

enormous time and energy required of module leaders is Alan Reynard, PhD, who leads the Foundation Block II Module, titled Principles of Disease and Therapy, which introduces students to immunology, microbiology, pharmacology and genetics their first semester.

"I have 25 lecturers from six departments and one good-hearted soul from industry," says Reynard. "Organizing this group, producing a schedule, collecting lecture notes in advance so they can be printed and distributed to the students prior to the start of the module, collecting and editing exam questions, interfacing with other module leaders so that exams from two modules aren't given on the same date, and meeting with student groups to get quality-control feedback are my principal tasks."

While Reynard's Foundation Block II Module is the largest in the curriculum in terms of faculty (it originally involved 34 faculty members), each module leader faces similar pressures.

To complicate matters, in the first year of the new curriculum, second-year students were simultaneously taught in the old curriculum. “So we had people who were double teaching that year in certain areas,” notes Brownie, “while other people did no teaching because their module came up in the second year. It was enormously complicated.”

Because the module leaders clearly needed assistance implementing the organizational tasks required of them, a position titled Coordinator for First- and Second-Year Integrated Curriculum was funded in the second semester of the new curriculum, at which time Nancy Cronk, a long-time staff member in the school, was named to the position.

In 2004, Cronk’s outstanding work in this new role was

write vignette-type questions, similar to the ones that now appear on the USMLE board exams. This type of test question, all faculty agree, is much more difficult and time-consuming to compose than questions that test only for knowledge in one basic-science discipline, with no attempt to imbed it in a clinical scenario.

“The module leader is the one responsible for the testing, and this can’t just be a piecemeal task that involves everyone submitting separate questions,” says Christopher Cohan, PhD, who leads the largest system module, Neuroscience and Behavior. “We have to sit together as a group—or in a coordinated series of smaller groups—to assure that the questions are meaningful to the students



In this small-group session, Manoj Iyer, standing left, and Alexander Kleinmann, seated right, discuss a case question.

In general,
clinical cases are integrated into the modules after a series of lectures are given to ground the students in fundamentals and after clinicians have had a chance to do some preliminary teaching about specific diagnoses and to discuss and demonstrate relevant procedures.

recognized when she was named recipient of the Naughton Award, given annually to a non-faculty individual who makes significant contributions to the school.

While Cronk’s organizational skills quickly became indispensable to module leaders, the early technical challenges they encountered remained formidable.

High on the list of these challenges was the preparation of examinations.

“Exams are the crusher,” says Brownie, who co-leads the Gastrointestinal Module with Michael Duffey, PhD.

In their module, for example, Duffey and Brownie give exams every two weeks. In order to do so, they must obtain questions from all faculty members teaching in the module and assure that the questions test the students’ ability to integrate basic-science knowledge and apply it to realistic clinical scenarios. To test students in this way, faculty must

and significant in terms of what is being learned. Leading this effort has to be someone who understands what the entire module is about, because, typically, faculty come in and give a few lectures on a particular topic and that will be their only responsibility. It’s the module leader who sees the big picture and has to assure that integration of knowledge—and the testing of this knowledge—takes place.”

Because good exam questions are so difficult to write, in the second year of the new curriculum the faculty in

most modules made the decision to stop giving exam questions back to the students.

“We had a couple of situations where old questions were being re-used, and who complained the loudest?” asks Brownie. “The *students*, because they realized they weren’t being validly evaluated.”

According to Brownie, this change has not only lightened the test-preparation burden for faculty, but has strengthened the tests because “we have questions we know are good, and we have thrown out the questions we know aren’t. And this, of course, is what happens in the national boards. They don’t give back any questions.”

students complained that there wasn’t enough integration,” continues Brownie. “But we never really planned that there would be a lot at that stage, and we should have just told them that; we should have explained that once they get through the first semester and get into the systems modules, that’s when it will really begin to be integrated.”

Even then, integration of the systems modules hasn’t happened overnight, but instead has been a work in progress, requiring constant “tweaking” from year to year, with each module introducing changes based on faculty experience and students’ comments.

For example, in the Gastrointestinal Module, faculty

Pictured near right is Christopher Cohan, PhD, leader of the Neuroscience and Behavior Module, with Vishnu Oruganti to his left.

In 2003 and 2004, Cohan received the Louis A. and Ruth Siegel Award for Excellence in Teaching.

Pictured far right are Mason Chang, left, and Jeffery Carter.



Integration, the Final Frontier

Of all the challenges inherent in implementing the new curriculum, one has been paramount: how best to integrate the vast amount of material that is being taught not only in terms of testing, but also in terms of teaching formats and the sequence in which the basic-science and clinical material are presented, both within each systems module, as well as across the entire curriculum.

“I think the only mistake we made in advertising our new curriculum,” says Brownie, “was suggesting that we would integrate from day one. When you are introducing disciplines like microbiology, immunology, biochemistry, and so on—as we do the first semester in the Foundation Block I and II modules—it’s very difficult to integrate, especially when there are so many teachers involved.”

At the end of the first semester of the first year “the

realized after the first year that they had overloaded the students with too much metabolism upfront, so changes were made accordingly.

“We made a big mistake trying to teach metabolism in about two and a half weeks,” says Brownie. “In the old curriculum, it was taught in eight weeks. The students confirmed what we knew, and so we made the adjustment.”

A related change to the GI Module involved removing from it lectures on ATP synthesis and transferring them into the Foundation Block I Module, in effect shaving a week off the GI Module.

“We realized it would be a good idea if the students, early on, knew how ATP is made,” says Brownie. “Every cell in the body makes it, so if the students don’t understand that aspect of energy metabolism, it’s difficult for them to understand a lot of other things.”

The best example of the overall flexibility of the new curriculum is the way in which the entire Hematology Module has been moved about to assure that it is presented to students at the best possible time.

In the first year of the curriculum, the module was situated at the start of the second year. In the subsequent two years it came at the end of the first semester of the first year, and for the 2004–2005 academic year, it was placed at the start the second semester of the first year.

“These changes represent the fluidity of the curricu-

Open and Shut Cases

Nowhere have efforts to integrate the curriculum been more nuanced and fluid than in the quest to determine the best format for presenting clinical cases within the modules.

Case-based learning—or problem-based learning, as it also has been called—has been part of the UB medical school’s curriculum since the late 1990s. Its place was marginal, however—never more than an add-on to lectures, which continued as the predominant teaching format until 2001.

With the advent of the new curriculum, case-based learning was called upon to play an integral role. As a result, all facets of the teaching format had to be harmonized within the curriculum to assure the students uniformity in the quality of their learning experience, as well as in the crediting and grading processes.

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Salomon Blutreich, left, and Nishant Bhatt team up to prepare an overhead transparency for their group’s clinical-case presentation.



lum, and the fluidity is not based on whether or not someone is in town; it’s based on common sense,” says Brownie.

“CBC [complete blood count] is one of the standard assays done on every patient,” he continues. “Students need to understand hematology in order to understand data presented in clinical cases, and we realized that if you wait until the second year, they really don’t understand the blood data that is being presented in clinical cases discussed in all their other modules.”

At the start of the new curriculum, each module “did its own thing” in terms of formatting how students participated in clinical cases. Drawbacks to this eclectic approach soon became evident, and after several semesters of trial and error and student feedback, faculty agreed to a more homogenous approach. Getting to that point, however, required that they leave their egos behind and follow one simple rule: If someone is doing it better than you are, copy them.

In general, clinical cases are integrated into the modules after a series of lectures are given to ground the students in fundamentals and after clinicians have had a chance to do some preliminary teaching about specific diagnoses and to

discuss and demonstrate relevant procedures. The cases are opened when a clinician teaching in the module (usually the person who wrote the case) presents it to the students.

By this time, the entire class has been divided into six groups of 24, with each group assigned to a separate lab for the clinical-case portion of the module. In the labs, the students further divide into quartets, which in some modules are randomly or alphabetically assigned by leaders, and in others, selected by the students. In some instances, the students have chosen to stay with the same quartet for all their modules.

After a new case is initiated, the entire class is given a set of six questions based on the case. The questions attempt to cover the full spectrum of care, from diagnosis to treat-

“But because of the way we do it now, they can’t just focus on one part of the case,” he continues. “They have to focus on the whole case. This way of doing it was introduced by the Cardiovascular Module leaders, Avery Ellis and Perry Hogan, and we instantly adopted it in our [GI] module, as did others.”

In most modules, new cases are initiated weekly or bi-weekly. Two days after the case is opened, students meet at 8 a.m. in the labs and are told which question their quartet is to answer and are given a half hour to prepare their 15-minute presentations. They are supplied with overhead transparencies and colored pens and must set to work outlining four key points they are expected to discuss, using their notes if needed.



Gwen Bernacki, left, listening to Alan Saltzman, MD, who co-leads the Lung/Respiration Module. Saltzman and Murray Ettinger, PhD, were instrumental in introducing case-based learning into the curriculum in the late 1990s.

Below, Joonhee Park, left, confers with classmate Chidiebere Ekeocha.



ment and prognosis, so the students must learn about the case in its entirety.

In their free time (remember, afternoons are unstructured), the students are expected to meet with their quartets and formulate answers to the questions.

When the new curriculum was just getting started, students were told which of the six questions their quartet was to formally present, but this is no longer done. Now they must be prepared, as a group, to answer any one of the six questions.

“Early on in the curriculum, when the students knew what their question was, they would come up with magnificent responses and would provide elaborate handouts from various sources, and so on,” says Brownie.

While the students are presenting, preceptors interject comments and explanations about things they feel the students are not understanding or correctly interpreting. These preceptors are expert clinicians, which is a change from the old problem-based learning format, where non-experts often served as small-group facilitators.

The Hematology Module, led by Lynne Steinbrenner, MD, Amy Sands, MD, and Gerald Logue, MD, was the first module to exclusively use clinician experts as preceptors and to demonstrate the effectiveness of this approach.

“I have to tell you the first time I saw the [evolved format] come together, it was absolutely superb,” says Brownie. “One of the students, who seemed to be the coordinator for the quartet, turned to the class and said: ‘All right, we are

going to ask you some questions. What do you think this means?' So, in essence he became the teacher. He wasn't just standing up there and making a presentation. He really got his fellow students involved. I felt lucky to see it."

Another important change made to the clinical case presentations was the introduction of a closure session, a change first introduced by the GI Module and then the Renal Module, led by James Lohr, MD.

After the entire class has completed their presentations on a case, they convene in the G26 classroom or Butler Auditorium and sum up the case.

"This means that the person who produced the case can ensure that all of the major points were covered and that the students correctly understand the relevant comments," explains Brownie.

Grades for the clinical case presenta-

the module, they must score at least 65 percent on the written exam.

The grade students receive from their classmates in effect becomes a determining factor in whether or not they receive honors.

While this change solved one problem, another still loomed: "We hadn't awakened to the fact that students could do well in the course without participating much in the case presentations," Brownie notes.

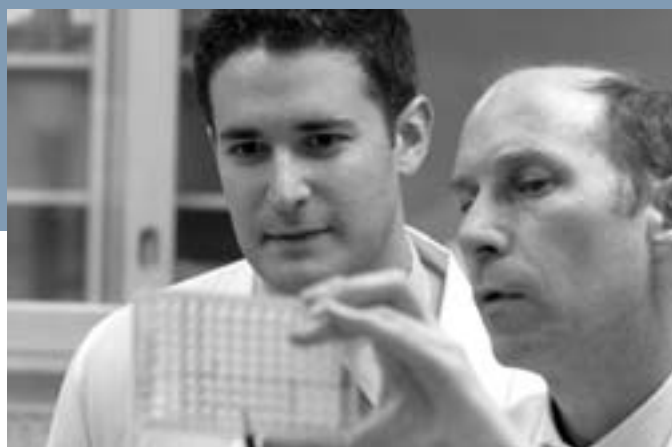
Even though it took faculty a while to arrive at a solution to this dilemma, when they did, it was a simple one: In



Above is Brian Neubauer, Class of 2006, on clinical rotations.

Below, left, is Jeffrey Feiner, Class of 2005, with John Crane, MD, during his medicine rotation at Erie County Medical Center.

Feiner and other members of his class will be the first to graduate from the new curriculum.



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**—Jeffrey Feiner,
Class of 2005**

tions are awarded by the preceptors based on the quality of presentations, although, in some modules, students are asked to grade their peers.

Early on, however, a problem arose in regard to this grading process: Between quizzes and points earned from case presentations, the students were acquiring so many course credits, they might not have to pass the written exam.

Today, classmates continue to grade one another for case presentations; however, in order for students to pass

the third year of the curriculum, they began to make sure that questions from the cases were covered on the exams.

"In the old curriculum, the students could get away, to some degree, without presenting a thing," observes Brownie. "But that isn't what happens in clinical medicine, is it? You have to describe your patients and you have to be able to explain things, so this new curriculum, in various ways, is preparing our students to do this."

Third-year student Brian Neubauer agrees that the new curriculum with its varied teaching formats has prepared him well for the clinical setting. "It forces you to think along lines that are more natural, which translates well into the clerkship environment," he says. "People don't just come up

to you and tell you what their abnormal lab values are. They come to you with complaints, so you have to think along the same lines we learned in the systems modules and use the same process to deduce problems. Over time, it builds a thought process that becomes more intuitive and which is going to make you more successful later on.”

As a result, review sessions were conducted throughout the second semester to help students prepare for a simulated Step 1 exam they were required to take in the spring of their second year. In addition, at the end of their second semester, the Class of 2005 was encouraged to stay on campus and attend a three-week course organized by Brownie.

“The best attendance we had was 55; sometimes 20,” he says. “People are very independent. Many had decided to go into a Kaplan course. Some people went to everything.”

In all the review sessions that first year, faculty focused their energies on making sure the students were able to integrate knowledge.

Understandably,
the Class of 2005 felt some trepidations about being the first class to enter the new curriculum, but most feel their worries and suggestions were diligently addressed by faculty every step of the way.

Shweta Patel, left, talks with Linda Wild, MD '76, a co-leader of the Lung/Respiration Module.

Below, left to right, are Al' Ai Flores, David Farrugia and Ellen Fitzgerald.



The First Class Through

Understandably, the Class of 2005 felt some trepidations about being the first class to enter the new curriculum, but most feel their worries and suggestions were diligently addressed by faculty every step of the way.

“I will be honest, it was kind of nerve-wracking to know they were trying out the new curriculum on us,” says fourth-year student Feiner. “But it seemed like [the faculty] put a lot of work into getting it done.”

“They were very open to feedback, probably a little too much so,” he adds with a laugh. “They had so many evaluations and feedback forms, it sort of made your head spin filling them all out.”

One near-universal concern for the Class of 2005 was, How well is the new curriculum preparing us for the boards? Needless to say, the faculty had similar concerns.

“We were trying to compensate for the problems with the courses that were divided up in the new curriculum,” explains Brownie. “Microbiology, for example, was taught in eight modules. So, in large part, the faculty were selected for the review courses based on who could help fill in some gaps.”

“And the students did pretty darn well,” he adds. “They worked very, very hard.”

In the second year of the curriculum, Dean Margaret Paroski instituted a compulsory two-week review course that is held in May and which, again, is geared toward integration of knowledge.

Not surprisingly, students in the Class of 2005 are proud of their trailblazing role in the new curriculum and their more-than respectable Step 1 board scores.

“While there were definitely some challenges for both the students and the faculty in employing the new curriculum and some anxiety as to whether or not we were better off in it, I don’t feel the basic-science years were any more difficult than previous years under the old curriculum,” says Nick Pietris, a member of the Class 2005.

“In fact, I feel that there were many benefits to the new style. And, as a whole, we performed better on the boards and enjoyed a better first-attempt pass rate than years prior to this. Also, in terms of our clinical performance, both residents and attending physicians have commented on their satisfaction with our class.”

Students entering UB medical school since 2001 are the beneficiaries of improvements made to the “new” curriculum by members of the Class of 2005 in collaboration with faculty.

Shweta Patel, a member of the Class of 2007, says, “I love medicine, and when I entered medical school, I thought this alone would carry me through the years of medical school, not medical school itself, which, for me, has been fun. Yes, I know that there will always be kinks in the road, but it’s assuring to know that I can count on the faculty and administration at UB to provide help whenever it is needed.”

As members of the Class of 2005 prepare to graduate this spring, having made their historic contribution to the school, they do so with a confidence that is hard-won and a sense of realism that perhaps makes them wise beyond their years.

“Did we complain about the new curriculum? Yes, of course we did,” says Feiner. “But we *like* to complain; that’s what medical students do. We’re all perfectionists to some degree, or we wouldn’t be here. No, we didn’t always like being experimented on. But in the end, it’s like so many things—we got out of it what we were willing to put into it.”

BP

Organ-Based Modules and Leaders

Year One, First Semester

- **Medicine and Society: Epidemiology and Biostatistics**

Leader: Carl Li
Meets for seven mornings

- **Gross Anatomy**

Leader: Robert Hard
Starts after the first week and meets the entire first semester

- **Clinical Practice of Medicine I**

Leader: Richard Pretorius (formerly, Andrea Manyon)
Meets the entire academic year, one afternoon a week

- **Foundation Block I**

Introduces biochemistry and molecular biology, including basic histology, metabolism and ATP

Leaders: John Cotter, Murray Ettinger
Meets the first half of the first semester as a corollary to Gross Anatomy

- **Foundation Block II**

Introduces immunology, microbiology, pharmacology, and genetics

Leader: Alan Reynard
Meets the second half of the first semester as a corollary to Gross Anatomy

Year One, Second Semester

- **Hematology**

Leaders: Lynn Steinbrenner, Amy Sands, Gerald Logue
Meets for two weeks

- **Gastrointestinal/Metabolism and Nutrition Module**

Leaders: Michael Duffey, Alexander Brownie
Meets nine to ten weeks

- **Renal Module**

Leader: James Lohr
Meets for four to five weeks

- **Musculoskeletal Module**

Leader: Reid Heffner
Meets for three weeks

Year Two, First Semester

- **Clinical Practice of Medicine II**

Leader: David Milling
Meets the entire academic year, one afternoon a week

- **Cardiovascular/Circulation Module**

Leaders: Avery Ellis, Perry Hogan
Meets for six weeks

- **Lung/Respiration**

Leaders: Alan Saltzman, Linda Wild, Brydon Grant
Meets five to six weeks

- **Neuroscience and Behavior**

Leaders: Chris Cohan, Linda Pessar
Meets 11 to 12 weeks

Year Two, Second Semester

- **Endocrine/Reproduction/ Life Cycle**

Leaders: Samuel Gallant, Edmund Egan, Alexander Brownie
Meets for seven weeks