



SYLLABUS: BMS6204

Medical Biochemistry & Genetics

Spring, 2009 (11/13/08)

CONTACT INFORMATION:

Course Director & Lecturer: Randolph Rill, Ph.D., Professor
Office: 3350-F COM (Southeast wing)
Office Hours: Tuesday, Wednesday, 4:00-5:00 pm or by appointment
Office Phone & Fax Number: 644-3661(Office-COM), 644-5781(FAX)
Email Address: randolph.rill@med.fsu.edu
Class URL: Access via BLACKBOARD (see further below)

Additional faculty will also participate as small group, case-based learning facilitators or lecturers.

Faculty: Nancy Clark, Akash Gunjan, Jamila Horabin, Mohammad Kabbaj, Sanjay Kumar, Charles Ouimet, Michael Overton, Branko Stefanovic, Yanchang Wang
Graduate/Postdoctoral Assistants: Azarias Challa, Xiaoqian Fang, Bradley Groveman, Nilin Gupta, Hyeong-min Lee, Dun Liang, Sarah Riman, Rohit Seth, James Sharkey, Holly Sikes, Fiona Smyth

GENERAL SCHEDULE: See Blackboard for detailed, daily schedule

Lecture: Monday through Friday, 1:00-1:50
Small groups: Tuesday, Thursday: 2:00-2:50
Tutorial (Optional): Thursday: 4:00-5:00
Quiz: Friday, 1:00-1:20 (combined with Physiology)

OTHER:

Block Exam Dates (Friday mornings): Jan 30, Feb 27, April 3, April 24
NBME Exam Date: April 30

COURSE MATERIALS

BLACKBOARD SITE:

This course is supported by a Blackboard site. All relevant course materials are posted to this site, excepting the learning resources listed below that students should purchase.

Included on the Blackboard site are the course Syllabus, Summary of Lecture Topics, Detailed Schedule of Course Activities and Topics, **reading assignments** (listed on the Course Activities Schedule), the PowerPoint presentations that correlate with these notes, and sample quiz questions.

Announcements, quiz keys and other course materials will be posted to the site as appropriate.

LECTURE PERIODS WILL INCLUDE INQUIRY-BASED LEARNING. STUDENTS ARE EXPECTED TO BE SUFFICIENTLY FAMILIAR WITH THE ASSIGNED READING TO ASK QUESTIONS AND PARTICIPATE IN CLASS DISCUSSIONS.

REQUIRED RESOURCES:

Biochemistry text: R.K. Murray et al., "*Harper's Biochemistry, 27th Edition*", Appleton & Lange (Stamford, Conn., 2006),

IMPORTANT NOTE: YOU ARE EXPECTED TO PURCHASE THIS TEXT.

This text is accessible through the COM library as an E-Book at
<http://www.accessmedicine.com/resourceTOC.aspx?resourceID=18>).

DO NOT PLAN TO PRINT CHAPTERS FROM THE E-BOOK. EXCESSIVE PRINTING VIOLATES THE LICENSING AGREEMENT AND WILL RESULT IN LOSS OF OUR LICENSE TO THIS AND PERHAPS OTHER BOOKS.

Medical Genetics Text: Lynn. B. Jorde, J.C. Carey, M.J. Bamshad & R.L. White, "*Medical Genetics*" Updated 3rd Edition, Mosby (New York), 2006 ISBN: 0-323-04035-8 (paperback)

RECOMMENDED SUPPLEMENTAL BIOCHEMISTRY TEXT:

J.W. Baynes & M.H. Dominiczak, "*Medical Biochemistry, 2nd Ed.*", Elsevier Mosby (New York), 2005, ISBN: 0 7234 3341 0

Comments: This text was used in earlier offerings of the course and may be available as a used book. Several students in the class last year found this text to have a simpler style and be easier to follow in certain parts of the course, particularly metabolism in the third and fourth units of the course. The text has many nice many nice clinical correlations and generally presents the material at a simpler level than the required text. Some chapters are weak, however, and there are a number of errors.

COMMONLY USED RESOURCES:

C. R. Scriver et al, "*Online Metabolic and Molecular Basis of Inherited Disease*", McGraw-Hill, <http://genetics.accessmedicine.com/> ;

Harrison's Practice, **E-Book:** <http://www.harrisonspractice.com/practice/ub>

ACP Pier, E-Book: <http://pier.acponline.org/index.html?hp>

T.D. Pollard and W.C Earnshaw, "*Cell Biology*", Saunders (2004)

Some WWW Resources/Databases (see also resources accessed through COM Library Web Page):

NIH/NCBI (National Institutes of Health, National Center for Biotechnology Information)
<http://www.ncbi.nlm.nih.gov/>

WebMD (access through COM Library)

Web of Knowledge <http://isi0.isiknowledge.com/portal.cgi>

THE Medical Biochemistry Website:

<http://www-isu.indstate.edu/thcme/mwking>

COURSE DESCRIPTION:

Medical Biochemistry and Genetics is a five credit course offered in the third semester of the first year of the medical curriculum, concurrent with Doctoring 103 and Clinical Physiology. The course goal is to provide the foundation for producing graduates who are knowledgeable in the fundamental biochemistry and genetics of normal and abnormal body processes. Students will apply this knowledge to course discussion of the biochemical and genetic bases of common or representative diseases, including their symptoms and treatments. They will come to understand and be able to evaluate potential advances of diagnostic and treatment modalities. Course topic scheduling is coordinated to prepare students for and reinforce topics in Clinical Physiology. The content of this course reinforces and amplifies on content of certain first year courses, particularly microanatomy/cell biology and physiology; and provides students with a foundation upon which to build in second year courses, clerkships and graduate medical education, with particular emphasis of preparation for pathology, pharmacology, physiology and microbiology. Student small-group learning experiences encourage professional behavior and teamwork in a context that promotes use of resources such as the library, faculty and information technology. The following list is illustrative

of the educational objectives of this course. Through interactive lecture sessions, small group sessions, and course examinations, students will be able to:

Knowledge:

- 1) Recognize and explain the functions of the key molecular components and steps of the synthesis, assembly, and degradation of biological macromolecules;
- 2) Recall and relate the molecular structures and chemical properties of biological macromolecules to their functions including ligand/substrate recognition, enzyme reactions, formation of multi-molecular complexes; and regulation;
- 3) Relate digestive processes and body production of usable and storable chemical energy to the chemical composition of foodstuffs, including vitamin and nutrient requirements;
- 4) Describe the inputs and outputs of human intermediary metabolism, and relate mechanisms of metabolic regulation by hormones, feedback loops and other mechanisms to body organ systems and their demands for energy and metabolites;
- 5) Recognize and explain the molecular basis of major body mechanisms for self-recognition and self-defense including blood factors, antibodies, anti-oxidants, hemostasis, and glucose homeostasis;
- 6) Describe key features and operating principles of the organization of the human genome, control of gene expression and cell cycle regulation;

Skills:

- 7) Relate knowledge of normal bio-molecular structure-function relationships, metabolic and regulatory processes, and defense mechanisms to the molecular basis, diagnosis and treatment of diseases;
- 8) Recognize and explain the sources, detection and consequences of genetic defect(s) underlying diseases;

Attitudes/Behaviors:

- 9) Demonstrate a professional attitude and good communication skills by effective participation in cooperative problem solving, especially in small group exercises directed towards understanding the biochemical and genetic bases of disease origins, diagnoses and treatments.

INSTRUCTIONAL METHODS:

- 1) Lecture (62 contact hours in 1 hr. sessions)
- 2) Small group, case-based learning (28 contact hours in sessions of 1 hr.)
- 3) Tutorial (voluntary problem-solving and student-initiated discussion, max 16 contact hrs.)
- 4) Review (voluntary after exams, 4 contact hrs max.)

Lecture periods consist of presentation and discussion of basic biochemical and genetics principles as they relate to normal organ function and life processes, and to well-understood diseases or medical conditions. Lecture periods are scheduled for one hour each, usually five times per week (see detailed schedule). Entering students are expected to have mastered a minimum of one semester (4 credit hours or equivalent) of general biochemistry, and also biology courses with classic genetics and basic molecular biology content. Brief reviews of basics will be given in lectures, but lecture periods will generally be devoted to more advanced topics and assume that the prerequisites have been met. Students are encouraged to request review of fundamentals during voluntary Tutorial sessions held weekly.

Tutorial sessions held weekly by the Course Director are intended to allow students opportunity to ask questions about topics recently presented in lecture or small group exercises. The sessions also allow opportunity to review basic biochemistry and genetics principles, since it is recognized that student competencies in biochemistry vary considerably. Student attendance is optional. Students are encouraged to provide specific questions in the published topic or indicate a different subtopic for review. As time permits, problem-solving will be practiced during Tutorial sessions using pre-selected problems.

Small group, case-based learning sessions are intended to reinforce subject material covered in lecture periods, to expand knowledge and understanding of the biochemical and genetic basis of common or representative diseases, and to illustrate applications of the subject material to present and future clinical medicine. Typically one or two exercises are completed per one hour session. Clinical cases or disease states are reviewed in most exercises to learn how biochemistry and genetics are applied to understanding, diagnosis and treatment of disease. Case-based learning exercises integrate biochemistry, physiology and genetics insofar as practical.

Review sessions are voluntary and student-initiated and are held after each examination to review topics causing students the most difficulty in the examination.

COURSE CONTENT AND OUTLINE:

See the **Lecture Topic Summary** and the **Schedule of Activities and Topics** posted in the "**Syllabus**" folder on the **Blackboard** site.

SOME EXPECTATIONS IN THIS COURSE:

Tutorial sessions and Biochemistry fundamentals.

This course cannot cover all the biochemistry, medical and molecular genetics that you eventually will be called on to know. You will be called on to know a great deal more in your USMLE Step 1 exam, in your year two courses, and as a physician. You are expected to come to this course with organic chemistry and one to two semesters of biochemistry (4 credit hours minimum), plus knowledge of cell and molecular biology and genetics covered in undergraduate biology pre-med courses. Although I will review a number of basics in these subjects, we cannot take class time to review them all or deal at great length with any one topic. The course texts are selected to be good resources for reviewing foundation material not covered explicitly in class. The tutorial periods also are intended to provide opportunities for me to assist students in reviewing fundamentals.



Sessions will be most productive if you come to tutorial sessions prepared to ask questions or with topic areas that you would like to review.



Review requests can be sent to me by email before tutorial and review sessions.

Lecture periods and core course content:

The core content of this course is defined in the context of lecture periods, the corresponding PowerPoint presentations and accompanying notes provided on the **Blackboard site**, and the related reading assignments in the text. **Reading assignments** are included in the **Schedule of Activities and Topics**.



Read and become sufficiently familiar with material in the reading assignment and appropriate Topic Outline before each class period to follow the lecture, respond to questions and participate in discussion.

To efficiently guide your learning I would like to spend some of the lecture period in an inquiry-based mode devoted to the more difficult aspects of the subject material. This mode will only be successful if you come to class prepared with a reasonable degree of knowledge of the subject.

Small group, Case or Context-Based Learning (CBL) sessions:

Connections between basic content and clinical applications are made in many lecture periods, but the CBL sessions allow more extensive opportunities to examine clinical connections in a format that invites discussion and integration of biochemistry/genetics with clinical knowledge. The CBL sessions thus serve the purposes of reinforcing knowledge gained in lecture periods, and expanding knowledge to understanding diseases/disorders, their diagnoses and treatments. No special preparation is required for the CBL sessions, but after the sessions you should study the Commentaries provided to understand fully the sessions, and be prepared to answer related questions on examinations. **Approximately 15-20% of the content of each examination will be devoted to material covered in the small group sessions and not in lecture.** (NOTE: Material unique to the small groups will not be tested on quizzes.) Group compositions will be changed at mid-semester to further the goal of developing team-building skills.



Study CBL Commentaries after sessions to consolidate and verify knowledge—remember that you will be tested on major concepts and important facts of CBL exercises.

GRADING/EVALUATION:

How Grades will be determined:

Unit Examinations: Four, 1 hr. examinations at approx. 4 week intervals.

Quizzes: Eleven (11), 10 min. quizzes on Friday prior to lecture, except on exam weeks.

Final Examination: NBME Subject Examination in Biochemistry.

Unit examination results are routinely subjected to item (question) analysis. All questions for which 60% or fewer of students answered the expected question are examined for error or ambiguity. After review by the Course Director the question may be retained without change, double keyed or (rarely) eliminated. No further appeals of these questions will be accepted.

Quizzes consist of six questions and are graded on a 'best five out of six' basis, with a maximum score of five (5). No appeals of questions are accepted.

The 'raw score' of the NBME Subject Examination is rescaled to a 100 point maximum scale in a manner so that the adjusted mean class NBME score is equal to the mean course performance to date (exams plus quizzes on a 100 point scale).

A student's letter grade will be based on the average percentage of questions answered correctly in each of the above evaluations. The contributions of the evaluation modes are as follows.

Unit examinations:	17% x 4 =	68%	
Quizzes:	2% x 9 =	18%	(best 9 of 11)
NBME Final Exam:		14%	
TOTAL:		100%	

Final Course Letter Grade Scale

A	=	≥ 90% correct
B+	=	87–89
B	=	80–86
C+	=	77–79
C	=	70–76
D	=	65–69
F	=	≤ 64

(Numerical scores are rounded according to standard convention.)

Self-evaluation and Instructor case-based learning assessment:

Students will be asked to fill out short self-assessment forms at the course mid-term and end. Analogous evaluation forms will be completed by case-based learning facilitators. Each student will be sent a brief mid-term report by the Course Director indicating notable areas of strength or weakness in case-based learning performance, and any other comments or concerns deemed appropriate. Students with notable weaknesses in performance will be counseled by the Director. These assessments will not be applied to the final letter grade, but will be retained by the Director for future evaluations, when appropriate.

Faculty and Course Evaluations:

Students will have the opportunity to evaluate each small group facilitator, using a standard evaluation questionnaire, at approximately mid-term and the end of the semester. Students will also have the opportunity to evaluate the course at its conclusion using College of Medicine and University instruments.

Conscientious completion of such evaluations is important for course improvement and career advancement of the participating faculty, and is expected of all students as a matter of professional behavior.

Suggestions and comments concerning the course, its material and conduct, are welcomed and may be made to the Course Director at any time.

COURSE POLICIES and RESPONSIBILITIES:

The following Attendance, Remediation, Honor Code, and ADA policies have been adopted by the Florida State University College of Medicine for all courses:

Attendance, Remediation, and Other College of Medicine Policies

COM Attendance Policy – Philosophy:

We believe that:

Professionalism is a major component of our medical curriculum. We believe students should conduct themselves appropriately in the various educational activities of the curriculum. This conduct includes coming to educational activities on-time, using the laptop computers only for course work during the educational activity, and not disrupting the class if late. The faculty should also demonstrate professionalism, by starting and ending all scheduled educational activities on time and providing a course schedule with clearly explained course policies in the course syllabus. Any changes in the schedule should be given to the students in a timely manner.

Students will be accountable and personally responsible for attending all educational activities (small groups, labs, clinical experiences, examinations, lectures, computer sessions, etc.).

Unexcused absences reflect negatively on the goals and objectives of the medical curriculum and demonstrate unprofessional behavior by the respective student.

We owe it to our state legislature and the citizens of the State of Florida to provide a quality educational program that meets the needs of our students in preparing them for the M.D. degree.

Attendance Policy

Students are expected to attend all scheduled activities. Students are expected to be on time. Being on time is defined as being ready to start at the assigned time. If a student has an emergency that prevents her/him from attending a scheduled activity, s/he is to call and notify the Office of Student Affairs (Year 1/2) or the Regional Campus Dean / Student Support Coordinator (Year 3/4) and request that they inform the supervisors/professors/clerkship faculty/education director for that activity. If at all possible, the student should also call and at a minimum, leave a message with one of the course/clerkship directors. It is important that students realize that their absence or tardiness negatively impacts a number of other people. Attendance, including tardiness, is part of the student's evaluation for professionalism. Negative evaluations may result in decreased grades and in severe cases, referral to the Student Evaluation and Promotion Committee.

Procedure for Notification of Absence

Year 1/2

If the student knows in advance of an upcoming legitimate absence, the online "Advance Request for Absence from Educational Activity(ies)" process should be followed as outlined below.

If the absence occurs due to an unforeseen emergency, the student should contact the course director and the Associate Dean for Student Affairs immediately to report the absence including the reason for the absence.

The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the course director and final decisions regarding these actions shall rest with the course director.

The online "Request for Absence" process should be used for all absences, including post-illness absences, regardless of whether the student is requesting an absence from one or more classes or the entire day. Here is how it works.

- 1) Student completes online form: <https://apps.med.fsu.edu/absence>
(Form will only work in Internet Explorer)
- 2) The form is routed to student affairs for approval then to appropriate Course Directors/Instructors
- 3) Course Directors will approve/deny request
- 4) Students can check on the status of the progress of the request by clicking on the "Pending requests" link, where they will be able to see if the instructor(s) has taken action on the form. (If the instructor has not taken action within 24 hours, students can contact him/her directly to let him/her know that the request is pending.)
- 5) The student will receive an email indicating whether the request has been approved/denied.

Students must include all the courses/activities they plan to miss on the requested day of absence (lecture, small groups, quiz, exam, OSCE, etc.) If students plan to be gone the entire day and fail to include an activity/class on the form, they will NOT be excused from that particular activity/class. It will be considered unexcused. It is the students' responsibility to ensure the form is filled out completely with all the courses/activities they will miss for that particular day.

If a student's request has been denied, the email will not indicate the reason nor indicate which instructor denied the request.

Some reasons that are likely to automatically disqualify an advance request are: exams, CLC sessions and OSCEs -- unless it is for extreme circumstances (illness, family emergencies, etc).

Remediation Policy for Absences from Examinations, Quizzes, Small Group Sessions, Preceptor visits, and Clerkship Call:

The remediation policies for absences from examinations, quizzes, small group sessions, and clerkship call are:

1. **POLICY ON MISSED EXAMINATIONS:** Students are required to take major in-term and final examinations. Based on Curriculum Committee policy, a student can only be excused from an examination by a course/education director decision based on the personal situation of the student. The Course/Education Director will determine the time of the exam make-up session. Also, according to the Curriculum Committee decision and the existence of the FSU COM honor code, the student will be given the same examination given to the other students. *In this course (BMS 6520), all examinations must be made up within one week of returning to class.*
2. **POLICY ON MISSED QUIZZES:** Students are required to take scheduled and unscheduled quizzes in the courses/clerkships. A student can only be excused from a quiz by a Course/Education Director decision based on the personal situation of the student. The student must make arrangements with the Course/Education Director to make up a missed quiz. Also, according to the curriculum committee decision and the existence of the FSU COM honor code, the student will be given the same quiz given to the other students. *In this course (BMS 6520), all quizzes must be made up within one week of returning to class.*
3. **POLICY ON MISSED SMALL GROUP SESSIONS, PRECEPTOR VISITS, AND CLERKSHIP CALL:** The student should contact the Course Director, small group leader, Clerkship Director or Education director for instructions on remediation of the missed session and material covered. *In this course (BMS 6520), missed small group sessions must be made up by reviewing the cases that will be available on Blackboard. The student will be responsible for the material.*

Academic Honor Code:

Students are expected to uphold the Academic Honor Code published in the Florida State University Bulletin and the Student Handbook: *The Academic Honor System of the Florida State University is based on the premise that each student has the responsibility (1) to uphold the highest standards of academic integrity in the student's own work, (2) to refuse to tolerate violations of academic integrity in the University community, and (3) to foster a high sense of integrity and social responsibility on the part of the University community.*

Students with Disabilities (ADA Statement):

Students with disabilities needing academic accommodations should:

1. Register with and provide documentation to the student disability Resource Center (SDRC);
2. Bring a letter to the instructor from the SDRC indicating you need academic accommodations. This should be done within the first week of class. Specific arrangements should be settled with the instructor 5 working days prior to each exam for which accommodations are being requested.

Copyright and Electronic Use:

This course web site and Blackboard site may contain copyrighted materials that are used in compliance with U.S. Copyright Law. Under that law, materials may not be saved to your computer, revised, copied, or distributed without permission. They are to be used in support of instructional activity as part of this course only and shall be limited to the duration of the course, unless otherwise specified by the instructor or owner of the material. You may only download or print materials at the direction of your instructor, who knows which materials

are copyrighted and which are not.

In addition, the Medical Library licenses a number of e-books for which specific chapter/sections in the book(s) may be pertinent to this course. It is important to remember that copying or printing the entire text is not compliant with copyright laws. Please copy and/or print only those portions you need for your personal use. Do not revise, copy, or distribute these materials to anyone not currently an FSU faculty, student or staff member.

Evaluations

Student evaluations of the course are an important way of improving medical education. Not only are your comments and suggestions valued, but the evaluation process represents one way for you to become familiar with the peer review process. Peer review is an important quality management function in all branches of medicine. In order for peer review to work properly, it must be taken seriously both by the evaluators as well as those being evaluated. Therefore, we ask that you give careful consideration to evaluations. When making comments, consider what you would say if you were face to face with the person to whom the comments are directed. How would you react if the comments were directed at you? Give thought to how learning resources were used in regard to the way you learn best. What worked for you and what did not? How is your time used optimally? Are you making adequate progress? Are you being challenged to improve? Be specific. Ultimately, your use of the evaluation process can help you learn how to improve your own medical practice.

Integration of this Course with COM Goals and Objectives:

BMS6204: Medical Biochemistry & Genetics			
General Competency	KEY	Institutional Learning Objective (Primary objectives addressed by this course are in BOLD)	Outcome Measure(s)
<u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u>			
Professional values, attitudes, and behaviors	AB1	Display the personal attributes of compassion, honesty, and integrity in relationships.	Observational assessment by faculty in small group learning setting.
	AB3	NA	
	AB6	NA	
	AB7	NA	
	S15	NA	
	AB9	Demonstrate respect for the roles of other healthcare providers and of the need to collaborate with others	Observational assessment by faculty in small group learning setting.
Moral reasoning and ethical conduct	K10	Describe and discuss the implications of basic ethical principles....	Observational assessment by faculty in small group learning setting.
	AB4	Demonstrate professionalism and high ethical standards ...	Observational assessment by faculty in small group learning setting.
Communicating with patients, families, and colleagues	S1	NA	
	S7	NA	
	S8	Demonstrate the ability to build rapport and to employ active listening and relationship enhancing behaviors.	Observational assessment by faculty in small group learning setting.
	S13	Demonstrate the ability to communicate compassionately and effectively...	Observational assessment by faculty in small group learning setting.
	AB2	NA	
Application of basic biomedical and behavioral sciences	K1	Recognize the scientific basis of health, disease, and medicine in the management of common and high impact medical conditions	Performance on NBME subject and comprehensive examinations; USMLE Step 1 and 2 performance; internal

to patient care		in contemporary society.	examinations;
	K2	Describe the development, structure and function of the healthy human body and each of its major organ systems at the macroscopic, microscopic, and molecular levels.	Performance on NBME subject and comprehensive examinations; USMLE Step 1 and 2 performance; internal examinations;
	K3	Recognize and discuss the implications of altered structure and function (pathology and pathophysiology) of the body and its major organ systems that are seen in various diseases and conditions.	Performance on NBME subject and comprehensive examinations; USMLE Step 1 and 2 performance; internal examinations;
	K4	Identify changes in the structure and function of the human body associated with the aging process and be able to distinguish normal changes associated with aging from those that denote disease.	Performance on NBME subject and comprehensive examinations; USMLE Step 1 and 2 performance; internal examinations;
	K5	Describe the molecular basis of diseases and maladies and the way in which they affect the body (pathogenesis).	Performance on NBME subject and comprehensive examinations; USMLE Step 1 and 2 performance; internal examinations;
	K7	NA	
	K12	NA	
	S9	Demonstrate the effective use of pharmacotherapeutic agents and other therapeutic modalities, while teaching patients the importance of preventative medicine, health promotion, and wellness.	Performance on NBME subject and comprehensive examinations; USMLE Step 1 and 2 performance; internal examinations;
Clinical skills		NA	
Problem solving and critical thinking	K6	NA	
	S3	Demonstrate the appropriate use of laboratory tests ... in making diagnostic and treatment decisions.	Observational assessment by faculty in small group learning setting.
	S4	Demonstrate the ability to evaluate the patient's medical problems and to formulate accurate hypotheses to serve as the basis for making diagnostic and treatment decisions.	Observational assessment by faculty in small group learning setting.
	S5	NA	
Lifelong learning and information management	K11	Describe strategies to support lifelong learning via both print and electronic sources to assist in making diagnostic and treatment decisions ...	Observational assessment by faculty in small group learning setting.
	S11	Demonstrate the ability to acquire new information and data and to critically appraise its validity and applicability to one's professional decisions...	Observational assessment by faculty in small group learning setting.
	S12	Demonstrate the ability to organize, record, research, present, critique, and manage clinical information.	Observational assessment by faculty in small group learning setting.
Social, cultural, and community context of health, illness, and care	K8	NA	
	K9	NA	
	K14	NA	
	AB8	Demonstrate awareness of the unique health care needs of ethnically diverse populations and communities.	Observational assessment by faculty in small group learning setting.
Personal awareness	AB5	NA	
	S17	Recognize abilities and limitations; know when to request assistance.	Observational assessment by faculty in small group learning setting.
Organizations,	S14	Demonstrate the ability to work effectively as part	Observational assessment by faculty in

systems, and quality improvement		of a health care team...	small group learning setting.
	AB10	NA	
	K15	NA	
	AB11	NA	
	S18	NA	

Relationship of course objectives to Curriculum Committee "Six Principles"

1. Promote a student-centered curriculum.

The Course Director provides a supportive environment by listening to student comments, responding to student queries after class, during office hours and by email; and by meeting occasionally with representative student subgroups. Several changes in the course have been made in response to student suggestions. Weekly 'tutorial' sessions are regularly scheduled to allow students to identify subject areas needing reinforcement in an informal, individualized setting. Separate review sessions are scheduled before each examination. Quizzes are given weekly between block examinations to encourage students to stay current. The course pace, subject coverage and total contact hours are sensitive to demands on student time. Data on biochemistry courses offered at other institutions suggests that contact hours for this course are moderate in comparison to many other institutions.

2. Provide a context-framed educational plan.

The lecture portion of this course contains numerous references to connections between diseases and the underlying biochemistry. The textbook was chosen in part because of the strongly physiological approach and multitude of clinical correlations. Nearly half of the required contact hours are spent in small group sessions in which students look up information to answer questions and solve problems related to a narrative description of a clinical case (~ 80%) or disease state (~ 20%). While the major emphasis of each exercise is to examine the biochemistry and genetics underlying the disease state in question, students are required to examine clinical issues related to symptoms, treatment and/or prognosis in each case. Ethics issues are also addressed in appropriate contexts. In total students examine the biochemical basis of about 40 diseases/conditions.

3. Integrate within years and across the curriculum.

The biochemistry course was strongly integrated with physiology after discussions with Dr. Posner. Choice and sequencing of biochemistry topics was done so that the chemical principles underlying physiological processes were provided students before the subject was covered in physiology. The main text has a strong physiology slant. Discussions with Dr. Paull about the Microanatomy course guided choice of topics related to cell and molecular biology. Coverage of cell signaling built on a foundation provided in Neurobiology. Material on antibodies, inflammation, hemostasis and other body defense mechanisms was included based in part on feedback from Dr. Klatt and my observations of topics covered in Pathology.

4. Base curriculum on measurable competencies (see separate document).

5. Encourage and facilitate scholarship and discovery of new knowledge.

Case-based small group learning sessions help connect research approaches and findings to medical practice. For example, students are encouraged to access the PubMed resource, OMIM (Mendelian Inheritance in Man)--an outcome of the Humane Genome Project--to garner information about the genetic bases of diseases encountered in cases. Case-based exercises are structured to allow time for both 'brainstorming' and access to Web-based digital information to solve problems. Small group facilitators encourage critical thinking, effective communication, team building and respectful professional behavior.

6. Educational environment will be appropriate to the mission of the medical school and students are educated in the biopsychosocial model.

Situations uniquely associated with disadvantaged, rural and geriatric populations are specifically addressed in both lecture and small group sessions. Some examples of issues addressed include neurodegenerative disease (early and normal onset Alzheimer's disease), metabolic syndrome and diabetes, alcoholism, starvation, poor nutrition in geriatric populations, and chronic disease leading to disabilities.

SYLLABUS CHANGE POLICY:

This syllabus is a guide for the course and is subject to change with advanced notice.
