

MOLECULAR CELL BIOLOGY & GENETICS – 2007

Course Description

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1. COMPETENCY-BASED GOALS AND OUTCOME OBJECTIVES

The first semester Molecular Cell Biology and Genetics course (MCGB) will help you to learn the fundamental molecular, cellular, and genetic processes common to all mammalian cells, with an emphasis on clinical relevance. The course will also involve you in three of Loyola's educational projects: the Vertical Genetics Curriculum, the competency-based curriculum, and the outcomes approach to assessment. (Go to <http://www.lumen.luc.edu/lumen/goals.htm> to see the complete Loyola University Chicago SSOM Competency Goals and Outcomes.)

When you successfully achieve the specific MCGB objectives for competency in 1) **Medical Knowledge** and 2) **Lifelong Learning, Problem-solving and Personal Growth**, you will have the necessary skills and attitudes to build a personal framework for understanding the scientific basis of medicine. You will also be prepared to master key principles and concepts taught in subsequent medical school courses. When you achieve the specific MCGB objectives for competency in 3) **Interpersonal and Communication Skills** and 4) **Professionalism**, you will be prepared to work effectively with your peers in other medical school courses as well as in collaborative health care provider groups in a clinical setting. Details of the outcome objectives are discussed in Section 10.

2. OUTCOMES-BASED SELF-ASSESSMENT PLAN

To become a successful independent learner, it is important that you evaluate your current strengths and weaknesses and set goals for improving your knowledge and skills. This activity creates a learning cycle of

Plan→Do→Assess.



We have provided forms at the end of this Introduction to assist you in this process. The first one is the Precourse Self-Assessment and Goal-Setting Form (Form 1). You should complete this form during orientation week and bring a copy to the first Small Group session for your faculty facilitator. In addition to self-assessment, this form will provide the faculty with information on your background knowledge, skills, and attitudes in the four core competencies related to the course. It will be used during your one-on-one meeting with your faculty facilitator(s) during Week 3.

You should reassess your goals at the end of Week 4 using the Midcourse Self Assessment Form (Form 2). You can discuss these goals and any issues related to Small Group with your facilitator at an optional one-on-one meeting during Week 5.

3. COURSE ORGANIZATION

The emphasis of the course will be on **student-centered** learning. The class will meet 4 hours daily, five days a week. You will be assigned readings from the textbooks and occasionally from journal articles. You will also be provided with handouts that contain a list of key concepts and learning objectives to guide your reading and study. Most class meetings will begin with one or two lectures in room 190 to reinforce and/or supplement the reading. The lecture(s) will be followed by a small group problem-solving session (SGPSS). These sessions will give you an opportunity to integrate information and to apply your knowledge to analyze and solve problems. Finally, you will return to the lecture hall for a “recap” session, where a faculty member will go over the problem set and answer questions. The course also includes six histology lab sessions.

To maximize your learning during lectures, SGPSS and labs, you should read the assignments prior to each class meeting. By reading the textbooks and reviewing the handouts, you will be able to anticipate topics to be covered in lecture. Consequently, you can pay particular attention to difficult concepts and ask specific questions. Coming prepared for the small group sessions is viewed as a professional obligation, and will be considered when evaluating your competency in professionalism.

Weekly Q&A Sessions are scheduled on Friday afternoons. These informal sessions will give you the opportunity for individualized interactions with faculty who have lectured during that week. You can also address questions to faculty and to other students through a computer-based web forum that can be accessed through the MCBG website (see Section 12). Finally, you will participate in an independent research/learning activity called the Medical Genetics Project (see Section 9). This project will culminate in a group oral presentation at a conference session to be held on Sept. 19.

The course topics are organized into modules, beginning with Protein Structure and Function (7/3/07 – 8/2/07), followed by Molecular Biology (8/3/07 – 8/15/07), Medical Genetics (8/16/07 - 8/23/06), Cell Biology (8/24/07 - 9/6/07), Histology (9/7/07 - 9/17/07), Advanced Molecular and Cell Biology (9/18/07 – 9/25/07), and the Medical Genetics Conferences. There will be three exams in the course. The first two exams will consist of USMLE-type multiple choice questions, and are scheduled for a

Monday. Exam 1 will cover content through the previous Friday. Exam 2 will cover content through the previous Thursday (8/30/07). Exam 3 will consist of two parts. The first part will be a laboratory practical that covers the six histology lab sessions and uses the virtual microscope (computer). The second part will be a standard multiple-choice exam that will cover lecture content (including histology) from Friday Sept. 7 to the end of the course, as well as information presented in the Medical Genetics Conferences. Both Exam 2 and Exam 3 will also contain some questions on material covered in previous exams. Two parts of the Medical Genetics Project, the presentation and the written literature research documentation, will also be graded.

4. COURSE GRADING

The final course grade will be based on assessment of both the **Medical Knowledge Competency** and the **Lifelong Learning Competency**.

Exams will be cumulative *in lieu* of a comprehensive final. The maximum number of possible points will be approximately 340, divided as follows:

<u>Exam 1:</u>	
6-7 one-point multiple choice questions for each daily session from July 30-Aug. 17:	≈ 100 pts.
<u>Exam 2:</u>	
a) 6-7 one-point multiple choice questions for each daily session from Aug. 21- <u>Sept. 6</u> ;	
b) 1-2 one-point multiple choice questions for each session, July 30-Aug. 17:	≈ 100 pts
<u>Exam 3 (written part):</u>	
a) 4-7 one-point multiple choice questions for each session, Sept. <u>7-25</u> ;	
b) 1-2 one-point multiple choice questions for each session, July 30-Sept. 6;	
c) 2 one-point multiple choice questions for each disease covered in the Medical Genetics student presentations (12 pts):	≈ 90 pts
<u>Exam 3 (histology practical, virtual microscope):</u>	30 pts
<u>Medical Genetics Project:</u>	
a) Presentation:	10 pts
b) Written materials:	10 pts

Final grades will be determined from the percentage of the total points achieved:

Honors:	≥ 91.5%
High Pass:	≥ 80.5% and < 91.5%
Pass:	≥ 69.5% and < 80.5%
Fail:	< 69.5%

Students who fail will be assigned a “Does Not Meet Expectations” for the **Medical Knowledge Competency** in the End-of-Course Competency Assessment Form (Form 7). Students who pass but score less than 75% can be assigned a “Meets Expectations with Concern.”

The evaluation of the **Interpersonal and Communication Skills Competency** and the **Professional, Moral Reasoning, and Ethical Judgment Competency** will be entered into the End-of-Course Competency Assessment Form (Form 7) by the course directors in consultation with faculty facilitators as discussed in more detail in Section 10.

5. IMPORTANT DATES

- July 30: First day of class. Bring a copy of completed **Form 1** to Small Group.
- Aug. 7: Sign up for required individual meetings with Small Group facilitators.
- Aug. 20: Exam 1
- Aug. 24: Bring completed **Form 2** to Small Group.
Sign up for optional individual meetings with Small Group facilitators.
- Aug. 27: Required Medical Genetics Project meeting (Tobin Hall, 1:30-2:30).
- Sept. 4: Small Group Medical Genetics Project planning session.
- Sept. 10: Exam 2
- Sept. 14: E-mail Medical Genetics Project abstract (Word or pdf file) to Dr. Simmons.
- Sept. 17: Post the Medical Genetics Project abstract and slides to Webforum.
- Sept. 19: Student Presentations, Medical Genetics Project.
- Sept. 21: Submit written materials for Medical Genetics Project to course directors.
- Sept. 28: Exam 3: Part 1: Written; Part 2: Histology Practical (virtual microscope)

6. TEXTBOOKS AND HANDOUTS

The following textbooks will be used in this course and in subsequent SSOM courses:

Molecular Biology of the Cell, 4th edition (2002), by Alberts, *et. al.*

Textbook of Biochemistry With Clinical Correlations, 6th edition (2006), ed. by Devlin

Thompson and Thompson's Genetics in Medicine: With STUDENT CONSULT Online Access, 7th edition, (2007), by Nussbaum, McInnes and Willard

Basic Histology, 11th edition (2005), by Junqueira and Carneiro.

Wheater's Functional Histology: A Text and Colour Atlas (with CD), 5th edition (2006), by Young and Heath

Course handouts for each day's session consist of a list of Key Concepts and Learning Objectives as well as copies of most slides used in lecture. The handout may also contain brief discussions of material inadequately covered in the text. However, you should take notes on the assigned readings and in lecture using the learning objectives as a guide. You will be expected to demonstrate understanding of all Key Concepts at the level indicated by the Learning Objectives. Note that the ***Learning Objectives can be covered in one or more of the following: reading assignment or lecture/class discussion or small group work.***

7. ATTENDANCE

You are expected to attend all lectures, small group meetings, recap sessions, and labs. This is especially important since Learning Objectives (and exam questions) may be covered in the reading or in ANY of these sessions. Student evaluations for the **Interpersonal and Communication Skills** and **Professionalism** competencies are based primarily on observations made by facilitators during SGPSS and lab sessions, and frequent absences lead to assessments based on less data. A pattern of unexcused absences will result in an unsatisfactory rating for **Professionalism**.

Make-up written/practical examinations will be given only in cases of excused absence as outlined in Part I of the Academic Policy Manual. Attendance at the Medical Genetics Conferences is expected since it is a part of your professional obligation to the course. Individuals unable to be present on their scheduled day may receive partial credit for the project by preparing an extensive written report. Such absences are expected to be rare and due to emergency only. Petition for partial credit must be made in writing and will be considered on a case-by-case basis.

8. LEARNING IN SMALL GROUPS

You will spend part of each day working on problems in a small group of 6-7 students. Your group will meet along with two other groups and an assigned facilitator (see Section 14) in a specific Learning Cluster room:

Groups 1,2,3	Room 340	Groups 13,14,15	Room 440
Groups 4,5,6	Room 350	Groups 16,17,18	Room 450
Groups 7,8,9	Room 370	Groups 19,20,21	Room 470
Groups 10,11,12	Room 380	Groups 22,23,24	Room 480

You should report to your room after each lecture, assemble into your group, and receive a problem set from the faculty facilitator. Consistent with the student-centered philosophy of this course, the facilitators will monitor the groups and assist them in the discussion *process*, but will not function as content experts. Facilitators will not lecture. They may answer questions at their discretion, but are normally asked to respond to a question with another question, or to direct students to raise the issue during the "recap session" that follows. A combination of good communication and problem-solving skills, a lively curiosity, and preparation (by reading the textbook and actively listening to lectures) will assure that one of the goals of small group sessions is met, namely that you achieve a deeper understanding of concepts by applying your knowledge in a novel context. A successful small group has members who have a combination of interpersonal skills including the ability to listen, to pose questions, and to communicate ideas effectively both orally and in writing (e.g., at the flipchart). Importantly, they have respect for one another and the desire to include everyone in the discussion (Section 10). Group members and facilitators will use the Small Group Assessment Forms (Forms 3 and 4) regularly to provide feedback to individuals and the group to assist in developing these skills and behaviors (Sections 10, 18). Following the small group session, the class will reassemble in the lecture room for a "recap session" where faculty will discuss the problems and answer student questions.

At the end of the course, faculty facilitators, in consultation with the course directors, will provide a summative evaluation of your competency in **Interpersonal and Communication Skills** and in **Professionalism (Form 7, End-Of-Course Competency Assessment Form)**, based both on your performance in Small Group and on the Medical Genetics Project (Section 9).

9. MEDICAL GENETICS PROJECT

Overview

The Medical Genetics Project is a small group exercise. You and your group will research information about a specific genetic disease and teach your findings to your classmates and faculty in a formal oral presentation. This project has several goals. It will give you an opportunity to further develop your ability to search for, and critically evaluate, scientific evidence about the principles and concepts covered in the course. This goal is important since there is now a vast array of powerful technologies and databases that are specific for medicine and basic medical sciences. These resources require significant practice to locate and use. The project will also add to your knowledge about a subset of Genetics Disorders that were selected by the Loyola Genetics Subcommittee as illustrating important principles in human genetics, patient care, and societal issues. Finally, this project will give you the opportunity to practice teaching difficult medical concepts to your peers, and ultimately to patients.

A required class meeting has been scheduled for Monday, August 27, from 1:30-2:30 PM in the lecture hall to discuss the genetics project requirements and to answer your questions. Your group should meet as often as necessary to complete the project (including the Sept. 4 Small Group session). Student presentations are scheduled in different rooms for Sept. 19, 1:30-5:30. You should plan to attend all student presentations in your room, in part because there will be questions on Exam 3 on the content of these talks.

Assignments and Schedule

Location	Time	Presenting Groups	Topic
Room 345	1:30 – 2:00	Room 340 – Group 1	Cystic fibrosis
	2:05 – 2:35	Room 340 – Group 2	Familial Hypercholesterolemia
	2:40 – 3:10	Room 340 – Group 3	Fragile X syndrome
	3:15 – 3:45	Break	Snacks
	3:45 – 4:15	Room 350 – Group 4	MEERF
	4:20 – 4:50	Room 350 – Group 5	Turner Syndrome
	4:55 – 5:25	Room 350 – Group 6	Familial Breast Cancer
Room 360	1:30 – 2:00	Room 370 – Group 7	Cystic fibrosis
	2:05 – 2:35	Room 370 – Group 8	Familial Hypercholesterolemia
	2:40 – 3:10	Room 370 – Group 9	Fragile X syndrome
	3:15 – 3:45	Break	Snacks
	3:45 – 4:15	Room 380 – Group 10	MEERF
	4:20 – 4:50	Room 380 – Group 11	Turner Syndrome
	4:55 – 5:25	Room 380 – Group 12	Familial Breast Cancer
Room 375	1:30 – 2:00	Room 440 – Group 13	Cystic fibrosis
	2:05 – 2:35	Room 440 – Group 14	Familial Hypercholesterolemia
	2:40 – 3:10	Room 440 – Group 15	Fragile X syndrome
	3:15 – 3:45	Break	Snacks
	3:45 – 4:15	Room 450 – Group 16	MEERF
	4:20 – 4:50	Room 450 – Group 17	Turner Syndrome
	4:55 – 5:25	Room 450 – Group 18	Familial Breast Cancer
Room 460	1:30 – 2:00	Room 470 – Group 19	Cystic fibrosis
	2:05 – 2:35	Room 470 – Group 20	Familial Hypercholesterolemia
	2:40 – 3:10	Room 470 – Group 21	Fragile X syndrome
	3:15 – 3:45	Break	Snacks
	3:45 – 4:15	Room 480 – Group 22	MEERF
	4:20 – 4:50	Room 480 – Group 23	Turner Syndrome
	4:55 – 5:25	Room 480 – Group 24	Familial Breast Cancer

Project Details

Grading: The Medical Genetics Project contributes approximately 32 points to the total of about 340 points that make up the final course grade (see Section 4). There will be 2 multiple-choice questions for each of the six diseases (12 points) on Exam 3. There will also be 10 points designated for evaluation of your presentation and 10 points for evaluation of your written documentation of your literature research strategy (see below).

Literature Search: Your small group should do a literature search on your assigned disease. Among the topics that you can research are disease etiology, pathogenesis, phenotype and natural history, management, inheritance risk, and family, social, legal, and ethical issues that relate to the specific disorder. It is not necessary or even desirable to research and present all possible topics. The nature and amount of current medical knowledge about each disorder varies, so it should become apparent from your research which issues are most important to stress for your assigned disease.

It is important for your group to work together to teach each other information and then to incorporate this information into an organized and non-redundant oral presentation. **However, each member of the group should initially do their own literature search. You should document your search strategy since you are being asked to submit a brief description of your efforts to the course directors** (see below). The process of developing a good search strategy is a learning experience that will take time and involve some failure. It is therefore appropriate that you also document an occasional “blind alley.”

Acceptable sources of information are textbooks, review articles, online resources (e.g. NIH, scholarly societies, patient advocate groups, etc.), review articles, and original research articles. You can get help in finding reliable information from the LUMC Library Website link “Resources for Medical Students,” which contains catalogs, online textbooks, databases, etc. **As one of your strategies, you must do a search of the research literature on Medline using either OVID or PubMed. You should not rely solely on secondary sources.** Use the tab “Tutorials/Education” on the Library Website and click on “Guides and Tutorials” to get detailed instructions on 1) how to use databases, 2) how to conduct a literature search, and 3) how to evaluate the reliability of the information you find. You and your group can get personal help by contacting Ms. Jeanne Sadlik (Coordinator for References & Education Services, Health Science Library) (X6-5304; jsadlik@lumc.edu) or a member of her staff.

The following are some useful websites that specifically reference genetic diseases:

www.geneclinics.org: presents detailed scientific reviews of specific genetic disorders, as well as labs and clinics that test for and treat specific disorders by locality (state).

www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=OMIM: Online Mendelian Genetics in Man (OMIM) website and database. “Search morbid map” (listed on left side of page) generates an alphabetical list of diseases, the affected genes, and their chromosomal locations

www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=gnd: Genes and Diseases website. The navigation tool on the left side of the page links viewers to specific classes of diseases. Clicking on a specific chromosome at the top identifies known diseases, associated genes, and their locations on that chromosome. Clicking on the disease gene gives some basic information about the disease.

library.luhs.org/: From the LUHS library webpage select PubMed under the heading ‘Quick Links’. From the PubMed page select Clinical Queries under the heading ‘PubMed Services’. At the Clinical Queries page you can carry out a ‘Medical Genetics Search’ near the bottom of the page. Enter the disease in the search window and select a category such as ‘Diagnosis’, ‘Clinical Description’, ‘Management’, ‘Genetic Counseling’, etc. You can also search the same disease under the heading “Search by Clinical Study” near the top of the page. The search categories here

are ‘Etiology’, ‘Diagnosis’, ‘Therapy’, ‘Prognosis’, etc. Finally, you can search for a systematic review of a genetic disorder under the heading ‘Find Systematic Reviews’ in the middle of the page. Each search produces a list of papers with the opportunity to view abstracts, if available. One can also click on an author’s name and retrieve a list of related publications by that author.

Abstract Submission: Your group should prepare a clear and concise abstract (less than two-thirds of a page single-spaced) which summarizes your research findings and the content of your presentation. Send this as a Word or pdf file by e-mail to Dr. Simmons (wsimmon@lumc.edu) by Sept. 14. The abstracts from all groups in your presentation room will be collated and distributed at the session.

Posting abstract/slides: Post your abstract and your group’s PowerPoint slides to the Webforum by Sept. 17 (see Section 12). This information will then be available to your classmates for studying for the 12 questions that will appear on Exam 3.

Presentation: Your group’s presentation should be 30 minutes long. Although each member can discuss a specific aspect of the genetic disease, make sure that the individual talks are well integrated. There will be a 5-minute question and answer period following the presentation. You should carefully read the **Tips for preparing slides**, and **Tips for giving your presentation** sections below for additional information.

Documentation of the literature search: Each student will be evaluated on his or her ability to conduct an effective literature search and to critically evaluate scientific and medical literature (see **Form 6**). Therefore, you should submit to the course directors the following information which documents those abilities:

- a) A description of your research strategies. This includes the databases (with the time-frame), websites, and search engines that you used to discover the information (e.g. Medline, UpToDate, any internet search engine or internet site, etc.) as well as a narrative describing of how your searches were carried out (e.g. which search terms you used in Medline and how you combined them to narrow the focus of the search).
- b) An annotated bibliography. Identify the sources that you used in your presentation (*5-8 items*). Indicate how you discovered each source, why you used each source, and briefly summarize the key information it contained. Provide a judgment about the reliability of each source based on reasonable criteria (e.g., the article appeared in a peer reviewed journal, the information was from a governmental website, or a website from a respected private organization such as the American Cancer Society).

You should prepare your own materials as a separate file identified by name and group. However, the course directors would appreciate it if the files of all members of a group are submitted to them in a single e-mail or on a single CD. These files are due no later than 5 PM on Friday, Sept. 21. Failure to submit the abstract (Sept. 14), post the abstract and slides on the Webforum (Sept. 17), or submit the search strategies and annotated bibliographies (Sept. 21) by the indicated deadlines will result in the deduction of points from either the Presentation grade or the Research and Analysis grade, and may result in a ‘Meets with Concerns’ for the Professionalism Competency.

Evaluation: The Medical Genetics Project will be evaluated in three different ways. You will be tested on your knowledge of the six genetic diseases through 12 multiple choice questions on Exam 3. Your presentation will be evaluated by the faculty members who attend your session (see **Form 5**). The course directors will collate these evaluations and assign up to 10 points toward your final grade

(see **Form 6**). (Some students who are at the session will also be asked to evaluate your group presentation, but these evaluations will not be used systematically to determine your grade.) Finally, the **Documentation of the literature search** materials will be evaluated by the course directors who will assign up to 10 points toward your final grade using **Form 6**.

Satisfactory completion of the Medical Genetics Project will result in a “Meets Expectations” in the **Lifelong Learning Competency** in the End-of-Course Competency Assessment Form (Form 7). This project will also contribute to the evaluation of the other core competencies (**Medical Knowledge; Interpersonal and Communication Skills; and Professionalism**).

Tips for preparing slides:

- a. Create a title that is clear, represents the content and breadth of the topic, and grabs attention.
- b. Use a simple, consistent background for each slide.
- c. Identify a single main idea for each slide.
- d. Use key words or phrases in place of long or complex sentences.
- e. Enhance message with pictures, graphics, etc.
- f. Incorporate features (color, animation, transitions, arrows, etc.) that focus attention and/or emphasize concepts.
- g. Limit the total number of slides to 3-4 per group member.

Tips for giving your presentation:

Each presenter should begin by identifying themselves by name. This is particularly important because some faculty members who will be evaluating the presentations may not know each presenter personally. The first presenter should begin with an overview of the genetic disorder and a description of the topic(s) that will be discussed by your group. Each presenter should start by identifying their topic and end with a “take-home” message(s). The last presenter should end by briefly summarizing the major “take-home” messages of all previous presenters.

Some general guidelines are:

- a. Devise strategies that elicit audience interest and aid recall (e.g, involving the audience in active learning such as asking questions, eliciting responses, etc..)
- b. Tell the audience what you are going to say, say it, and then tell them what you have just said. (tell-say-tell)
- c. Explain the features of each slide and relate content to previous and subsequent slides.
- d. Use a pointer to keep the audience focused.
- e. Speak loudly enough to be heard, vary the intonations of your voice, do not rush your words, and avoid mumbling.
- f. Whenever possible, maintain eye contact with all sections of the audience.
- g. Exhibit a relaxed appearance and display a suitable enthusiasm for your topic.

Project a professional image:

- a. Dress and groom in a manner appropriate for a professional conference.
- b. Demonstrate respect for the audience and respect for the content of each presentation.
- c. Attribute sources where appropriate.

10. CRITERIA FOR ASSESSMENT OF COMPETENCY-BASED GOALS AND OUTCOME OBJECTIVES

This section summarizes the specific knowledge, skills, and attitudes in the four core competencies that will be measured in this course. As discussed briefly in Section 1, Stritch School of Medicine requires its medical students to develop competencies in six areas: 1) Medical Knowledge, 2) Interpersonal and Communication Skills, 3) Professionalism, Moral Reasoning, and Ethical Judgement, 4) Lifelong Learning, Problem Solving, and Personal Growth, 5) Clinical Skills and Patient Care, and 6) Social and Community Context of Healthcare. The details of what constitutes competency in these areas are given at <http://www.lumen.luc.edu/lumen/goals.htm>. The MCGB course will evaluate student competencies in four of the six areas as described below.

1) Medical Knowledge Competency

Outcome objectives

By the end of this course, students must have demonstrated knowledge about the fundamental molecular, cellular, and genetic processes common to all mammalian cells and the ability to use principles and concepts of cell biology, molecular biology, genetics, and histology to analyze medically relevant data, solve problems, make predictions, and determine a course of action. Students will demonstrate understanding of the following subject areas at a level that will be specified by learning objectives for each day's lecture, small group, or lab (see lecture schedule and handouts):

1. Protein structure and function (7/30/07-8/2/07):
2. Molecular biology (8/3/07-8/15/07)
3. Medical genetics (8/16/07-8/23/07; and Medical Genetics Project)
4. Cell biology (8/24/07-9/6/07; 9/18/07-9/25/07)
5. Basic histology (9/7/07-9/17/07)

Assessment of Medical Knowledge

Multiple choice questions written in the format of the U.S. Medical Licensing Examination (USMLE), and based on specific learning objectives for each lecture and SGPS, will be used to assess knowledge of protein structure and function, molecular biology, medical genetics, cell biology, and histology. Competency in histology will also be assessed by a practical exam at the end of the course using a virtual microscope. Based on the grading system described in Section 4, a course failure will result in a "Does Not Meet Expectations" designation for **Medical Knowledge Competency** in the End-Of-Course Competency Assessment Form (Form 7). A grade of pass but less than 75% will be given a designation of "Meets Expectations with Concern."

The Medical School Exam Policy will be followed. **The procedures resemble those of the USMLE and have been adopted by all courses at the medical school.** Examinations will be administered by computer. Students are not permitted to ask questions during exams. Students who are suspected of cheating at any time during an exam will be asked to leave the examination room and will receive a failure on that exam. Such matters will be handled in accordance with procedures established by the Medical School Council.

2) Interpersonal and Communication Skills Competency

Outcome objectives

By the end of this course, students must have demonstrated knowledge of the basic principles of effective interpersonal communication, and the skills and attitudes that allow effective interaction with their peers, faculty, and support staff. Students will:

1. Use verbal language effectively.
2. Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, and questioning skills.
3. Use written language effectively.
4. Facilitate the learning of other students, including giving effective feedback.
5. Use information technology to manage information, access online information and communicate findings with other students.
6. Communicate essential information effectively within their small group and with others in the context of a formal presentation.

Assessment of Interpersonal and Communication Skills

Outcomes for this competency will be evaluated in the setting of both the Small Group Problem Solving Sessions and the Medical Genetic Project presentations. In small group sessions, students will periodically evaluate themselves, other members of the group, and the group as a whole using **Form 3** (Small Group Assessment, Student Version; see Section 18). The faculty facilitator will also periodically evaluate each student's interpersonal and communication skills using **Form 4** (Small Group Assessment, Faculty Version). The Medical Genetics Project also affords opportunities to evaluate students' abilities to communicate with and teach faculty and peers by means of written information and an oral group presentation of a genetic disorder with slides. At course end, the course directors, consulting with faculty facilitators, will submit to the Medical School a global evaluation of a student's interpersonal and communication skills on **Form 7** (End-Of-Course Competency Assessment Form, see Section 18), which becomes part of a student's record.

3) Professionalism, Moral Reasoning, and Ethical Judgment Competency

Outcome objectives

By the end of this course, students must demonstrate a combination of knowledge, skills, attitudes, and behaviors necessary to function as a respected member of a learning team in both small group and large class settings. Students will:

1. Behave professionally.
2. Interact effectively with other small group members in the educational setting.
3. Recognize and effectively deal with unethical behavior of other members of the class, if encountered.

Assessment of Professionalism, Moral Reasoning, and Ethical Judgment

Outcomes for this competency will be evaluated in the context of the MCBG course based on observations of course directors, faculty facilitators, and others. It is expected that students will be punctual, will come to class prepared, and will be respectful of their peers, teachers, and other course personnel. At course end, the course directors, consulting with faculty facilitators, will submit to the Medical School a global evaluation of a student's professional conduct on **Form 7** (End-Of-Course Competency Assessment Form), which becomes part of a student's record.

4) Lifelong Learning, Problem-solving, and Personal Growth Competency

Outcome objectives

By the end of this course students must demonstrate the knowledge, skills and attitudes needed to be able to use appropriate tools of evidence to identify and analyze books, reviews, online resources, and basic science reports for their applicability towards quality healthcare.

Students will:

1. Apply acquired knowledge effectively.
2. Locate, appraise, critically review and assimilate evidence from scientific studies and medical literature.
3. Use information technology learning resources to manage basic science information, access online information and support their own education.
4. Demonstrate a commitment to individual, professional and personal growth.

Assessment of Lifelong Learning, Problem-solving, and Personal Growth

The Medical Genetics Project affords opportunities to evaluate students' competencies in the first three life-long learning outcomes given above. The details of the project were described in Section 9. Personal Growth will be monitored by student self-assessment. At the first Small Group session, each student will turn in a completed **Form 1 (Pre-course Self-assessment and Goal Setting Form)**. This form may be discussed in the one-on-one student/facilitator meetings during week 3. At the end of week 4, each student will turn in a completed **Form 2 (Midcourse Self-assessment Form)** that will be discussed in optional one-on-one student/facilitator meetings during week 5. At course end, the course directors, consulting with faculty facilitators, will submit to the Medical School a global evaluation of a student's life-long learning, problem-solving and personal growth competency in MCBG on **Form 7 (End-of-course Competency Assessment Form)**, which becomes part of a student's record. This evaluation will also be based on the quality of the student's library research and genetic presentation and observations by the student's small group facilitator(s).

The grades for the four competencies as reported on **Form 7** are "Meets Expectations", "Meets Expectations with Concerns", or "Does Not Meet Expectations". Any grade of "Does Not Meet Expectations" or "Meets Expectations with Concerns" will be accompanied by a comment specifying what generated the concern and what needs improvement. **Competency grades are reported to a Council of Competency Directors, which tracks the progress of individual students throughout all four years of the curriculum. These grades are part of a student's record at Loyola.** A "Student Progress Committee", in consultation with the appropriate course and competency directors, will assist students who fail to meet expectations in a particular competency to develop a remediation plan. Students who do not remediate a "Does Not Meet Expectations" or who have accumulated multiple "Meets with Concerns" in a given competency by the end of the year 2 can be prevented from proceeding to year 3. The evaluation of competency outcomes has become a feature of undergraduate and graduate (residency) medical education throughout the United States, and is not unique to MCBG or Loyola.

Course failures will be treated in accordance with Part I of the Academic Policy Manual.

11. TUTORING, LEARNING ASSISTANCE, AND COMPUTER LAB

It is the faculty's goal that every student successfully completes this course. To this end the faculty will provide assistance to any student requesting it. Consult sections 13-15 for faculty office locations and telephone numbers.

Learning assistance is available from Beth A. Sonntag, M.Ad.Ed., Director of the Teaching and Learning Center. Her office location and phone number are: Room 255, 216-5447. She can provide help in such areas as test-taking skills, note-taking and study skills, managing stress, and managing time. Her service can also provide tutors for students who need additional help. ALL students are urged to consult the Teaching and Learning Center website, www.meddean.luc.edu/tlc, for a listing of services and scheduled workshops that are offered to students.

12. WEBFORUM

The student and faculty participants in this course have been placed into a computer webforum group to facilitate online discussion of learning issues. The webforum is accessed through LUMEN (Loyola University Medical Education Network) at www.meddean.luc.edu/lumen/meded/cellbio/index.htm. Students may post questions via the forum at any time, using their personal computers and modems from home or the networked computers in the computer lab (CALL). Faculty will check this online discussion daily and will post responses the same or next day. In addition, faculty may post additional information, practice questions, short videos, animations, etc., that will enhance student understanding of lecture concepts. Student response to questions and faculty postings is encouraged and expected. We hope this discussion will bring the faculty and students together into an interactive learning community to enhance the quality of our collective understanding of the Key Concepts in this course.

13. FACULTY: COURSE LECTURERS

John Clancy, Ph.D., CHAIRMAN, CBNA¹, Reseach Bldg., room 5653, X66352

John Callaci, Ph.D., Burn and Shock Trauma Institute, EMS Bldg., room 4249, X72461

Samuel Cukierman, M.D., Ph.D., Physiology, Reseach Bldg., room 4626, X69471

Mitchell Denning, Ph.D., Pathology, Cancer Ctr., room 304, X73358

Andrew Dingwall, Ph.D., Pathology, Cancer Ctr., room 334, X73141

Kimberly Foreman, Ph.D., Pathology, Cancer Ctr., room 302, X73239

Allen Frankfater, Ph.D., COURSE DIRECTOR, CBNA², Research Bldg., room 6661, X68109

Carolyn Jones, M.D, Ph.D., Pathology, EMS Bldg., room 2216, X72641

Elizabeth Kovacs, Ph.D., Burn and Shock Trauma Institute, Bldg. 110, room 4232, X72477

¹ Dept. of Cell Biology, Neurobiology and Anatomy

² Division of Molecular and Cellular Biochemistry, CBNA

Caroline Le Poole, Ph.D., Pathology, Cancer Ctr., room 303, X7203

Mary Manteuffel, Ph.D., MCB DIVISION DIRECTOR, CBNA², Bldg. 102, room 6635, X63370

Richard Schultz, Ph.D., CBNA², Research Bldg., room 6653, X69378

William Simmons, CO-COURSE DIRECTOR, Ph.D., CBNA², LUH North Entrance, room 2724, X63362

Nancy Zeleznik-Le, Ph.D., Medicine, Cancer Ctr., room 337, X73368

14. FACULTY: SMALL GROUP FACILITATORS

Mauruzio Bocchetta, Ph.D., Oncology Institute, Cancer Ctr., room 204, X73238

Michael Collins, Ph.D., CBNA², LUH North Entrance, room 2276, X64560

Samuel Cukierman, M.D., Ph.D., Physiology, Research Bldg. 102, room 4626, X69471

Mitchell Denning, Ph.D., Pathology, Cancer Ctr., room 304, X73358

Kimberly Foreman, Ph.D., Pathology, Cancer Ctr., room 302, X73320

Allen Frankfater, Ph.D., CBNA², Research Bldg., room 6661, X68109

Earle Holmes, Ph.D., Pathology, LUH McGaw Entrance, room 0120, X63292

David Keating, Ph.D., Microbiology and Immunology, Maguire Ctr., room 3931, X60869

Caroline LePoole, Ph.D., Pathology, Cancer Ctr., room 303, X72032

Mary Manteuffel, Ph.D., CBNA², Research Bldg., room 6635, X63370

Gregory Mignery, Ph.D., Physiology, Research Bldg., room 5607, X61181

Margaret Prechel, Ph.D., Pathology, EMS Bldg., room 5225, X72754

Richard Schultz, Ph.D., CBNA², Research Bldg., room 6648, X63360

William Simmons, Ph.D., CBNA², LUH North Entrance, room 2724, X63362

Karen Visick, Ph.D., Microbiology Immunology, Maguire Ctr., room 3860A, X60869

15. FACULTY: LAB FACILITATORS

¹ Dept. of Cell Biology, Neurobiology and Anatomy

² Division of Molecular and Cellular Biochemistry, CBNA

Lee Cera, D.V.M., Ph.D., Comparative Medicine, Bldg. 101, room 0745, X66746

John Clancy, Ph.D., CBNA¹, Research Bldg., room 5653, X63353

John Callaci, Ph.D., Burn and Shock Trauma Institute, EMS Bldg., room 4249, X72461

Elizabeth Kovacs, Ph.D., Burn and Shock Trauma Institute, Bldg. 110, room 4232, X72477

Phong Le, Ph.D., CBNA¹, Research Bldg., room 5637, X63603

Fletcher White, Ph.D., CBNA¹, LUHS North Entrance, room 0747, X66728

Pamela Witte, Ph.D., CBNA¹, Research Bldg., room 5680, X63358

16. COURSE STAFF

Kelly Killion, Education Specialist, SSOM, room 320, X67989

Mary Kay Olson, Laboratory Coordinator, CBNA, Research Bldg., room 5624B, X66872

17. SMALL GROUP PROBLEM-SOLVING SESSIONS: ROOMS AND FACILITATORS

Room 340 – Allen Frankfater, Ph.D.

Groups 1, 2, 3

Room 350 – Kimberly Foreman, Ph.D., Maurizio Bocchetta, Ph.D.

Groups 4, 5, 6

Room 370 – William Simmons, Ph.D., Mary Manteuffel, Ph.D. - Facilitators

Groups 7, 8, 9

Room 380 – Caroline Le Poole, Ph.D., Earle Holmes, Ph.D.

Groups 10, 11, 12

Room 440 - Richard Schultz, Ph.D.

Groups 13, 14, 15

Room 450 – Samuel Cukierman, M.D., Ph.D., Gregory Mignery, Ph.D.

Groups 16, 17, 18

Room 470 – Margaret Prechel, Ph.D., Michael Collins, Ph.D.

Groups 19, 20, 21

Room 480 – Karen Visick, Ph.D., David Keating, Ph.D.

Groups 22, 23, 24

18. SUMMARY OF ASSESSMENT FORMS (in the handout following this Introduction)

Form 1: Precourse Self-assessment and Goal Setting : to be completed by each student and turned in to the faculty facilitators at the first Small Group Problem Solving Session on July 30. The form will be discussed at the one-on-one meeting with your facilitators during week 3.

Form 2: Midcourse Self-assessment: to be completed by each student and turned in to the faculty facilitators by the end of week 4 (August 24). This form may be discussed at your optional one-on-one meetings with your facilitators during week 5.

Form 3: Small Group Assessment, Student Version:

Form 4: Small Group Assessment, Faculty Version:

There are two Small Group Assessment Forms, a student version and a faculty version. Both forms assess interpersonal and communication skills, and professionalism. The student version is more explicit, describing the specific behaviors that individual members of a successful small group are likely to display. These forms will be used regularly for a “360° assessment”: faculty facilitators will assess individual students; individual students will self-assess; individual students will assess their groups and their peers. Facilitators will meet individually with each student from their small groups during Weeks 3 and 5 of the course to give formative feedback.

Form 5: Medical Genetics Presentation Assessment: to be completed by instructors, facilitators and selected students in attendance at the genetic presentations. (However, the presentation grade will be determined solely by faculty members.)

Form 6: Course Directors’ Grade Sheet, Medical Genetics Project: Part A indicates the grade point distribution for evaluation of the Genetics Project *Presentation*. The number of points given will be determined by faculty evaluations (Form 5). **Part B** indicates the grade point distribution for the *Research and Analysis* portion of the Genetics Project. The number of points given will be based on evaluation of the written literature research materials submitted to the course directors.

Form 7: End-Of-Course Competency Assessment: to be completed by the course directors with input from facilitators and staff members. The form reports an overall summative assessment of outcomes in the four core competency areas evaluated in this course. Data to be used include examinations, observations during SGPSS, and performance on the Genetics Project. Students are encouraged (but not required) to use the forms to self assess. Self-assessments must include comments to justify the rating and are due by October 5, 2007.