The Fundamentals of Molecular Medicine course prepares students for the organ blocks by presenting foundational concepts and principles in molecular and cellular medicine. This includes an analysis of cellular structures and organelles, protein structure and function, nucleic acid biochemistry, replication and repair of DNA, the processes of transcription and translation, regulation of gene expression, modern molecular techniques used for diagnosis and research, the metabolism of carbohydrates, proteins, purines and pyrimidines, and fatty acids, human genetics (Mendelian and mitochondrial inheritance patterns and probabilities, positional cloning, cytogenetics, imprinting, triplet repeat expansions, multifactorial diseases, tumor suppressors, and the relevance of the human genome project to medicine), signal transduction pathways, and elementary nutrition. Mechanisms by which cells sense and respond to their environment will be presented, along with elementary pharmacodynamics, pharmacokinetics, and the absorption, distribution, metabolism and excretion of pharmacologically active compounds. Students will also be introduced to some of the basic concepts and principles of immunology and microbiology. The material learned in this course will form the background for all courses that follow, and will be expanded upon in the Fundamentals of Cellular Medicine course, and as organ-specific functions are discussed.

**Course Directors**

- Michael A. Lieberman, PhD (Email: lieberma@uc.edu)
- Keith Stringer, MD (Email: keith.stringer@uc.edu)
- Bryan Mackenzie, PhD (Email: bryan.mackenzie@uc.edu)

**Registration**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Section</th>
<th>Class #</th>
<th>Credits</th>
<th>Class Schedule*</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNTD7068C</td>
<td>001</td>
<td>20718</td>
<td>5</td>
<td>Mon-Fri, 8:00AM–12:00PM</td>
</tr>
</tbody>
</table>

**Assessment**

- **Weekly Assessments** (72%)
  - Multiple-choice, computer-administered
  - 6 tests: 12% each = 72%

- **Pharm Small Group (P/F)**
  - Powerpoint submission and presentation
  - Case presentations discussed in small groups (4 students/group) and then presented to entire class

- **End of Block Exam (28%)**
  - Multiple-choice, NBME-administered
  - Comprehensive test covering all material in the course

**Grading**

Grading will be in line with CoM policy with no adjustment for the distribution of scores. There is no option for the remediation of grades after the scheduled final exams (i.e. no make-up test).

- **A** 90%–100%
- **A−** 85%*–89.99%
- **B+** 82%–84.99%
- **B** 78%–81.99%
- **B−** 74%–77.99%
- **C** 70%–73.99%
- **F** Below 70%

*Note: threshold for A- (85%) may be adjusted up or down based on overall class average

**Prerequisites**

Acceptance into Special Master’s Program in Physiology
Attendance

Lectures are recorded and streamed online and attendance is not mandatory. Students are responsible for the material presented in all didactic activities. Attendance is required at all learning sessions which involve team/small group based activities, all assessments and examinations and any session that has a patient as a presenter or has a panel of presenters.

Auditing

No auditing option

Canvas, LEO & Email Policy

Messages sent via Canvas/LEO will be considered sufficient notice.

Textbooks

For Human Genetics and Cytogenetics:
Jorde, Carey and Bamshad, Medical Genetics, 2015, 14th edition, Elsevier Publishing (print copy on reserve and also available electronically) ISBN 978-0323188357

For Pharmacology:


For Biochemistry:
Lieberman MA and AD Marks, Marks’ Basic Medical Biochemistry, A Clinical Approach, 2013, 4th edition, Wolters Kluwer Lippincott Williams & Wilkins. (print copy on reserve and available electronically through the Health Sciences Library). The 5th edition has just come out, and readings will refer to both the 4th and 5th edition.

For Cell Biology/Histology:

For Physiology:
Textbook of Medical Physiology, 13th edition, by John E. Hall and Arthur C. Guyton, 2016, Elsevier. This will be available electronically in the HSL with no limitations. Older print editions on reserve.


For Pathology:

For Nutrition:

For Immunology:

For access through the Health Sciences Library use the following link to find all textbooks which have electronic access:
http://libraries.uc.edu/hsl/research/com-ebooks.html

Class schedule is posted in LEO (https://medicineonline.uc.edu). Schedule is subject to change, and students are required to log-in regularly to for changes in the schedule.