Gross Anatomy

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First Year Courses

Gross Anatomy

Microscopic Structure and Development

Human Development (Embryology) allows students to learn the entire span of human development from fertilization to birth. The sequence of development of all tissues and organ systems, placentation, congenital malformations and their causes, critical periods of development, and human embryology will provide students with a basis for understanding gross anatomy, microscopic anatomy, and neurosciences. As students progress through their medical studies, they will appreciate embryology increasingly as a correlator of disciplines such as anatomy, pathology, physical diagnosis, surgery, pediatrics, genetics, and obstetrics and gynecology.

Neurosciences

Integrated teaching of concepts of neurosciences fundamental to modern medicine. Neuroanatomy and neurophysiology are taught using a unified approach with emphasis on clinical relevance. The material is presented through a combination of lectures, laboratories, self-instructional sessions, and problem-based clinical case sessions.

Biochemistry

The lectures in this course present the chemical transformation of compounds and elements important for human metabolism, including carbohydrates, lipids, amino acids, nucleic acids, vitamins, hormones, and minerals. In addition, the relation between structure and function of proteins is emphasized, particularly with respect to hemoglobin, collagen, enzymes, and the plasma proteins. Finally, molecular aspects of metabolic regulation, nutrition, and hormonal control are presented. Several correlations on the relationship of biochemistry to medical problems such as cancer, diabetes, arteriosclerosis and other areas are integrated within the course.

Human Physiology
Medical Physiology is the study of human physiology from a perspective of the function of human organ systems. This course provides the basic principles of organ system physiology with emphasis on understanding important concepts and their correlation to the practice of clinical medicine. This course includes lectures by Physiology faculty, clinical correlation presentations by clinical faculty, tutor-facilitated small group problem solving of patient case studies, and quizzes and examinations that emphasize clinical vignette questions.

**Introduction to Clinical Medicine (ICM) 1a and 1b**

Introduction to Clinical Medicine I is the first year of a cumulative two-year course concerning the clinical application for medical sciences. The first-year course is intended to provide a foundation for the student to develop skills in the patient encounter and doctor/patient relationship. The course also provides a foundational study in biostatistics, epidemiology, and behavioral sciences. The student must complete a standardized patient examination assessing physical examination skills at the end of the year. This course contributes to the students' capacity for completing Step 1 of the USMLE board examination through testing modeled in a similar format. The course is divided into two semester-long parts that are graded separately.

**Objective:** The student should be able to record a patient's medical history and perform a physical examination on a normal adult male or female using a standard format. The student will be able to understand the meanings of various abbreviations commonly used in general medical practice. The student will not be expected to be able to do a pelvic exam or a well baby exam until the second year. The student will have an understanding of the doctor/patient relationship and human development. The student will develop skills and competencies and understand the process of obtaining a sexual history, a substance abuse history, and performing a mental status examination. The student will learn basic statistical methods and study designs used in medical literature and techniques for accessing medical information utilizing electronic means.

**Second Year Courses**

**Microbiology and Immunology**

The course consists of lectures and laboratories integrated with discussion groups, videos, clinical correlations, and conspective review seminars. The course material examines the role of pathogenic microorganisms and alterations of the immune response in human disease. Recent information is melded with traditional knowledge to educate the medical students in the fundamental aspects of medical microbiology and immunology.

**Pathology**

Pathology is an introductory course to human disease. Emphasis is placed on the correlation of gross and microscopic alterations in organs and tissues with biochemical and physiological dysfunction and clinical disease. The course consists of a lecture series, small group discussions, and study of gross and microscopic specimens.

**Genetics**

The Genetics course reviews basic genetic principles, new genetic mechanisms and current molecular technology that is available to diagnose genetic and/or genetically influenced diseases in clinical medicine. Students will gain insight into approaches to diagnosis, management, genetic counseling, and also the emotional issues that they must deal with related to these entities through the use of different teaching methods including problem-based learning and patient/parent interviews. Knowledge that is gained through classroom participation and written materials will be useful in caring for patients in clerkships, electives and medical practice.

**Pharmacology**

http://www.louisville.edu/medschool/curr/basicscidesc.htm

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The aim of the course is to provide students with basic knowledge regarding general principles of drug action and the properties of specific categories of drugs. Types of information presented about drugs include their mechanism of action, adverse effects, disposition in the body (absorption, distribution, metabolism, and excretion) and therapeutic uses. This knowledge should assist students in learning to make rational and intelligent decisions regarding the clinical use of drugs.

**Clinical Neuroscience**

The major aim of this course is to provide integrated instruction in several subject areas which are related to diseases and dysfunction of the central and peripheral nervous systems. Each subject area will be taught using an interdisciplinary approach to pathophysiology, diagnosis, and treatment of the disorder. A variety of teaching methodologies will be employed, including lecture, small group tutorials, problem solving, panel discussions, and case presentations, and self-study. Wherever possible, the course will bridge basic science areas with clinical medicine.

**Introduction to Clinical Medicine (ICM) 2a and 2b**

ICM 2 is the second year of a cumulative two-year course concerning the clinical application of medical sciences. The second-year course is intended to improve upon student skills in the patient encounter and doctor/patient relationship. The course also provides a study in formal decision analysis, culture, belief systems, ethics, clinical information management, psychiatry, and behavioral sciences. The student must complete a standardized patient examination assessing focused physical examination skills and abilities in eliciting patient histories at the end of the year. This course contributes to the student's capacity for completing Step 1 of the USMLE board examination through testing modeled in a similar format. This course is divided into two sections that are graded separately.

**Objective:** This course introduces students to the techniques necessary to obtain a meaningful history and perform a thorough physical examination. At the completion of this course, students will be expected to accurately collect, record, and report pertinent physical and biological data from adult patients and formulate problem lists and assessments. Students will learn about disease manifestations from exposure to various specialty areas and general practice. Students will perform two complete history and physical examinations at bedside in the presence of a preceptor and prepare four cases based on patient interviews. Preceptors will enhance the written and oral material with discussions of basic laboratory data.

Students will enhance their interpersonal skills to improve clinical diagnosis through exposure to the basic concepts of the behavioral sciences, development of an understanding of the manifestations and underlying dynamics of human behavioral diversity, and application of that understanding when establishing a therapeutic patient-physician relationship. Students will learn insights gained from human behavioral development and various psychodynamic models of personality development to better understand prevalent behavioral problems that patients present in the clinical setting. Under the supervision of a preceptor, students will apply skills and concepts learned in the behavioral sciences to better cope with the normal fears and anxiety that accompany medical illness.

Additionally, students will learn basic statistical methods and study designs used in medical literature and techniques for accessing medical information utilizing electronic means.

**Third and Fourth Year Required Clerkships**

**Family Medicine Clerkship**

This six-week rotation will enable medical students to understand the principles of family medicine and their application in community practice. Most of the students' time in the clerkship will be spent in ambulatory care settings although students will have opportunities to work with physicians in the care of their hospital and nursing home patients.

The School of Medicine and the Department of Family and Geriatric Medicine are committed to providing medical training in areas away from the University medical center.
setting in conjunction with the Area Health Education Center Program (AHEC). The clerkship places students with family physicians in approved AHEC locations throughout Kentucky.

Students will also work with faculty and residents at three residency training sites for the Department of Family and Geriatric Medicine. Students will observe the family physician’s interactions with sub specialists and use of allied health professionals. The students will gain an appreciation of different skills required to manage patients in the outpatient setting and in the context of the family unit.

Goals: The Family Medicine Clerkship will allow students to appreciate the content and practice of family medicine in a variety of settings. Students will learn to evaluate and manage common problems in family medicine, both acute and chronic. They will learn principles of disease prevention and health promotion in family medicine. Students will recognize the importance of the doctor/patient relationship and improve skills in patient interaction. They will learn the role of a variety of community agencies/resources vital to health of the community.

Method of Evaluation:

- Six problem-specific evaluation forms
- Interim assessment form completed
- Summative evaluation forms from preceptor
- Evaluation of student presentation by faculty moderator
- Evaluation of participation at community agency site visits
- Completion of independent learning opportunities and nutrition module
- Three standardized patient exams (will receive numerical grade)
- Final exam includes 1) multiple choice exam from textbook; 2) essay questions from geriatrics; 3) quiz from common problem presentations and independent learning opportunities

Pediatrics Clerkship

The eight-week Pediatric Clerkship experience introduces the student to a unique, complex, and challenging field of medicine. It emphasizes those aspects of general pediatric important for all medical students and will provide a foundation for those students who elect further study the health care of infants, children, and adolescents. Students have the opportunity to participate in the clinical activities of both general and subspecialty pediatric services, but the emphasis in all services is placed on basic issues and common illnesses. Approximately 50% of the student's time is spent in outpatient settings.

The clerkship focuses on human development biology and emphasizes the impact of family, community, and society on child health and well being. It also focuses on the impact of disease and its treatment on the developing human and emphasizes growth and development, principles of health supervision, and recognition of common health problems. The role of the pediatrician in the prevention of disease and injury and the importance of collaboration between the pediatrician and other health professionals is stressed. Pediatrics shares with the other third year clerkships the common responsibility to teach the knowledge, skills, and attitudes basic to the development of a competent general physician.

http://www.louisville.edu/medschool/curr/basicscidesc.htm
Goals: The goals of the core curriculum in Pediatrics are to foster:

- acquisition of basic knowledge of growth and development (physical, physiologic, and psychological) and of its clinical application from birth through adolescence;
- development of communication skills that will facilitate the clinical interaction with children, adolescents, and their families, and thus ensure that complete, accurate data are obtained;
- development of competency in the physical examination of infants, children, and adolescents;
- acquisition of the knowledge necessary for the diagnosis and initial management of common acute and chronic illnesses;
- development of clinical problem-solving skills;
- an understanding of the influence of family, community, and society on the child in health and disease;
- development of strategies for health promotion as well as disease and injury prevention;
- development of the attitudes and professional behaviors appropriate for clinical practice; and
- an understanding of the approach of pediatricians to the health care of children and adolescents.

Method of Evaluation:

- Clinical performance (outpatient, inpatient, and newborn nursery)- 33%
- Pediatric Exam of the National Board of Medical Examiners- 33%
- Completion and performance of Clipp cases and accompanying questions- 33%

Internal Medicine Clerkship

The Internal Medicine clerkship is a ten-week rotation consisting of four weeks on a general medicine inpatient ward service; four weeks on a subspecialty service (Cardiology, Gastroenterology, Hematology/Oncology, Infectious Diseases, and Nephrology); and two weeks on an intensive care service. The facilities of the University of Louisville affiliated hospitals provide the settings in which practical clinical experience in internal medicine is obtained. This clerkship is specifically designed to provide students with a varied experience and the opportunity to learn clinical medicine using the patient's history and physical examination diagnostic modalities, and the medical literature. Emphasis is on differential diagnosis and the natural history of disease. Students are integral members of the patient care team, with direct responsibility for
evaluation and management of patients. It is also an opportunity to develop strong interpersonal and professional skills. We hope that students will learn how to problem solve and encourage students to learn and read on their own.

**Goals:** Several essential skills to master during this rotation include:

- to become proficient in obtaining a detailed medical history and performing a thorough physical examination;
- to think through (problem solve) clinical problems and construct appropriate diagnostic possibilities and therapeutic plans;
- to learn the art of oral case presentation;
- to be able to understand, in depth, each medical disease presented by the individual patient encounter while on this rotation, to know how to seek help from colleagues, how to use the medical literature and how to teach what you have learned to your team members;
- to select, interpret, and discuss diagnostic tests and procedures;
- to learn the basis of each subspecialty area of internal medicine.

**Method of Evaluation:** Students will receive one grade for the clerkship based on:

- Clinical performance (assessed by attendings, fellows, residents-35%)
- NBME Subject exam- 35%
- Quizzes- 15%
- Attendance at conferences and lectures- 15%

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**Basic Surgery Clerkship**

The junior clerkship in general surgery provides both didactic instruction and hands-on clinical training. Students work in the clinics and operating rooms of University Affiliated hospitals. Opportunities are provided for the history and physical exam and workup of surgical patients, and for participation in their daily care in the hospital. Students receive orientation in the operating room and assist in operations performed on their patients. They also attend clinics with their team and frequently see their patients again after their discharge from the hospital. Lectures, seminars, and hands-on demonstrations are especially emphasized.

**Goals:** The primary goal of the clerkship is to expose students to the broad field of general surgery. The student is expected to be familiar with the diagnosis of surgical diseases; understand pathophysiology; enumerate treatment options, including indications for operative procedure and prevention of disease; and perform basic surgical skills.

Students are expected to know their patients, do assigned ward work, attend student lectures, assigned rounds and conferences, and perform other duties as outlined...
Obstetrics and Gynecology Clerkship

Important concepts of obstetrics and gynecology are presented in lectures and conferences. Practice is afforded in gynecologic history taking and physical examination by specific assignment of patients on the wards and in clinics. Each student is required to observe and participate in obstetrical and gynecological procedures.

Goals: To teach the minimum technical and diagnostic skills necessary for the evaluation and care of female patients within the scope of any type of primary care.

Methods of Evaluation: 30% NBME written exam, 20% oral examination, 30% observation of ward/clinical performance and 20% attendance/participation in seminars and assigned presentations. Attendance during the clinical rotation is highly relevant to the final grade.

Psychiatry Clerkship

Clerkship is designed to introduce the students to basic psychiatry through intensive clinical experiences, didactic lectures, and self-instructional materials. Students learn to recognize and treat patients with psychiatric disorders, and to assist in the treatment of psychiatric emergencies. The major emphasis in this competency-based curriculum is on development of psychiatric skills for the primary care physician.

Students serve a six-week rotation on one of the following services: Child Psychiatric Services, Norton Psychiatric Clinic, Emergency Psychiatry, University of Louisville Hospital (ULH) Inpatient Service, Psychiatry Outpatient Clinic, Adult Consultation/Liaison Psychiatry, or Veterans Administration Medical Center (VAMC). Students are expected to participate in case conferences, attend seminars, attend weekly departmental grand rounds, and participate in the daily schedule of the clinical services to which they are assigned. Each student is also assigned emergency room duties on nights and weekends.

Fourth Year Required Rotations

Neurology Clerkship

Students are required a minimum of two weeks on hospital ward service at either ULH or VAMC; location assignments are made according to career interests. Those requesting four weeks of inpatient neurology must take two weeks at ULH and two weeks at VAMC. Other options include two weeks of neurosurgery, two weeks of pediatric neurology, or two weeks of outpatient clinics. Students evaluate inpatients, outpatients, and patients on whom the Neurology Service is consulted. They are required to record a complete history and physical examination and to conclude with an analysis of each case, suggesting appropriate diagnostic tests. Students are required to consult literature pertinent to the clinical problems encountered each day. They should be prepared to demonstrate a neurologic examination to the neurology resident and attending by the end of their two weeks on hospital wards. Minimal night call with resident backup is required on the hospital wards as is attendance at the 3-5 lectures given by Neurology faculty and residents throughout the four weeks of each clerkship rotation. Those taking the neurosurgery or pediatric neurology options are required to attend other conferences indicated by their preceptor(s).

Method of Evaluation: Successful completion of the clerkship requires a passing grade at national standards on the final SHELF examination given on the last Friday of each rotation as well as satisfactory written evaluations by attending physicians. Students wishing for an "honors" grade must achieve the minimum final examination score recommended for honors according to SHELF exam national standards, must arrange with the Clerkship Director to write a short paper on a neurologic topic, and must
be recommended for honors on the written evaluation(s) submitted by their attending physician(s).

In-patient General Medicine

Students join a teaching team, usually composed of one attending physician, one or more house staff (fellow, resident, intern) and/or third-year medical students. As an "acting" intern, the fourth-year student’s level of responsibility is that of a graduate intern, with the exception that a graduate physician must countersign all orders and entries into medical records. Students are responsible for the evaluation and management of their assigned patients and the timely completion of medical records, including hospital discharge summaries. They are expected to take call with their ward teams. Students assigned to hospital services will be excused from only one night call if they are interviewing for residency programs out-of-town during the rotation. A patient log must be maintained and submitted to the Undergraduate Education Office upon completion of the rotation.

Goals: To provide the student opportunity to obtain practical experience in Internal Medicine with hospitalized patients. To enable the student to become more knowledgeable and skilled at diagnosing and treating patients who have medical problems.

Method of Evaluation: Evaluation of clinical knowledge, skills, and attitude is by observation of performance by attending physicians, fellows and/or residents. To pass the course, students must achieve a minimum average of 70% on their clinical evaluations and a passing score of 62 on the Medical Subject exam from the USMLE Step 2. Students must also pass review by the Department of Medicine Education and Evaluation Committee.

Perioperative Medicine Clerkship

The goal of the Perioperative Medicine Course is for medical students to learn how a patient is appropriately managed in the perioperative setting, reinforcing the basic concepts in anatomy, physiology, pathophysiology, and pharmacology. Unique opportunities will avail themselves as a patient gets prepared for surgery, undergoes an anesthetic and surgery, then follows a postoperative path.

In-patient General Surgery

The student will join a teaching team consisting of at least one resident and supervising faculty member and will function as an acting intern under their direct supervision. As an acting intern, the student will participate in the pre-operative and post-operative care of the surgical patients, as well as participating in the operating room. Specific duties will vary slightly between services and hospitals. The hours will vary according to the rotation, but will average eight to twelve hours a day, occasionally longer. Rotations available for the course are: Elective-ULH; Trauma- ULH; VAMC; Norton Hospital; Jewish Hospital; In-patient ENT; Transplant; and plastic and reconstructive surgery.

Goals: To enable the students to become knowledgeable and skilled at diagnosing and treating patients with surgical problems.

Method of Evaluation: 30% written examination- students take a written exam covering a spectrum of surgical diseases. Students must achieve a score of at least 65% to pass the exam and must pass the written exam in order to pass the course. 70% clinical performance- student's clinical knowledge, skills and attitudes in caring for surgical patients are evaluated by their supervising residents and faculty. The student must achieve a score of at least 70% to pass the clinical performance evaluation.
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