

Medical Center Campus Interdisciplinary Studies

The Office of Graduate Studies on the KU Medical Center campus offers two two interdisciplinary programs with oversight by the University of Kansas Center for Health Informatics (<http://www.kumc.edu/health-informatics.html>) through its advisory council. Please see the specific catalog section for these two programs for detailed information about the programs.

Master of Science in Health Informatics (<http://catalog.ku.edu/nursing/ms-health-informatics>)

Health Informatics Post-Graduate Certificate (<http://catalog.ku.edu/medicalcentercampusinterdisciplinarystudies/healthinfogradcert>)

The Office of Graduate Studies also oversees several graduate level interdisciplinary courses. These courses have GSMC and IPHI subject codes. Please select the "Courses" tab at top of this page for a listing of these courses.

Center for Health Informatics Courses

IPHI 820. Program, Project, and Communication Planning. 2 Hours.

Strategies to promote program, project, and communication planning are presented and applied by the student. Communication strategies for informing, guiding, and persuading clients, health care providers, payers, and other stakeholders to advance program and project development are discussed. The use of evolving information technologies to improve program, project and communication planning is emphasized. Prerequisites: Corequisite: NRS 880, or consent of instructor. LEC.

IPHI 850. Introduction to Health Informatics. 2-3 Hours.

This course will provide an overview of health informatics focused on five themes: health informatics foundations; clinical decision support; human factors/organization factors; public health informatics and current issues in health informatics including best practices. Students enrolled for 3 credits will develop and demonstrate a practical, innovative small-group information technology (IT) project from one of a set of faculty recommended projects or from a student-proposed idea. Prerequisite: Consent of Instructor LEC.

IPHI 851. Transforming Health Care through Use of Information Systems and Technology. 3 Hours.

Includes 2 credit hour lecture and 1 credit hour practicum. The application of the information system development life cycle in the design, selection, and implementation of health information technology applications will be examined. Human computer interactions and emerging technologies will be explored for their impact on patient care and safety. The role of legal, regulatory, ethical and security issues will be discussed as they apply to clinical and consumer information technologies. Prerequisite: Consent of Instructor. LEC.

IPHI 852. Health Data: Theory and Practice. 3-4 Hours.

Includes 2 credit hour lecture and 1-2 credit hour practicum. Principles of database theory, modeling, design and manipulation will be introduced. Students will have experience using a relational database management system. Database manipulation will be explored using structured query language (SQL) to compose and execute query statements and critically evaluate the results. Prerequisite: None. LEC.

IPHI 853. Abstraction and Modeling of Healthcare Information. 3 Hours.

Includes 2 credit hour lecture and 1 credit hour practicum. The information system development life cycle process is presented with emphasis on determination and analysis of information system requirements and system design that meet the identified health care information requirements. Object-oriented techniques will be introduced, including Unified Modeling Language and Unified Modeling Methodology, to facilitate process analysis and design proposal development. Prerequisite: NRS 820 and consent of instructor. LEC.

IPHI 854. Knowledge Management in Healthcare. 3 Hours.

Includes 2 credit hour lecture and 1 credit hour practicum. Knowledge management is the creation, communication, and leveraging of a healthcare organization's knowledge assets. Defining knowledge, describing the knowledge creation cycle, and the identification of the knowledge worker and his/her impact on the organization are discussed. Information technology and communities of practice are presented in a balanced approach supporting a systematic viewpoint of the knowledge management process. Knowledge management theory is enhanced with the performance of a knowledge audit and the development of knowledge management tools. (Same as NRS 854.) Prerequisite: NRS 820 and consent of instructor. LEC.

IPHI 856. Health Informatics Practicum. 1-3 Hours.

In collaboration with healthcare information faculty, preceptors, students design an experience to facilitate application of theories and research related to health care informatics. Emphasis is on the application of the information system development life cycle. Students analyze the leadership and technical behaviors of various informatics roles and negotiate an informatics project to be completed within the practicum. Prerequisite: All Specialty Core, Leadership Core, IPHI 853, Abstraction and Modeling of Health Care Information, IPHI 852, Health Data: Theory Practice. Prerequisite or Co-requisite: IPHI 854, Knowledge Management in Healthcare, IPHI 851, Topics in Health Care Informatics, IPHI 860, Research Project in Nursing, or consent of instructor. LEC LEC.

IPHI 860. Research Project. 2 Hours.

Students will conduct a health informatics research project. A research report, designed artifact, or other appropriate deliverable will be developed. Prerequisite: A research course and two informatics core courses, or consent of instructor. The research project must meet research guidelines for the MS Informatics program. LEC.

IPHI 957. Health Informatics, Human Factors, and Ergonomics as Applied to Patient Safety. 3 Hours.

Includes 2 credit hour lecture and 1 credit hour practicum. The use of information systems including medical devices is paramount in achieving patient safety. Students will attain an inclusive understanding of how human factors and ergonomic principles can be used to improve patient safety in the design, implementation, and evaluation of information systems and medical devices. Additionally, health care professionals will acquire skills to appropriately apply error reduction strategies developed in high reliability organizations. Prerequisite: Consent of instructor. LEC.

IPHI 958. Knowledge Representation and Interoperability. 3 Hours.

Includes 2 credit hour lecture and 1 credit hour practicum. The need to exchange clinical information consistently between health care providers, care settings, researchers and other requires syntactic and semantic interoperability. Requirements and approaches to meet interoperability will be explored. Standards for messaging, terminology, and knowledge representation will be investigated. Prerequisite: Consent of instructor. LEC.

Graduate Studies Medical Ctr Courses

GSMC 50. Science Special Studies. 0 Hours.

The aim of this course is to teach the methodologies and skills required for conducting biomedical science research, or practice in a clinical setting. The learning experience will be tailored to individual needs with personalized instruction for the opportunity to learn new skills and competencies, or exposure to new research developments or clinical practice. Progress of the student will be monitored through weekly laboratory meetings with members of the research lab or weekly contact with the student and/or clinical instructor in the clinical setting. The students will self-assess their progress and receive constructive feedback from appropriate individuals in the lab or clinical setting. Prerequisite: Permission of instructor in the Office of International Programs. LBN.

GSMC 99. Postdoctoral Studies. 0 Hours.

Postdoctoral Studies RSH.

GSMC 501. Foundations of Interprofessional Collaboration I: Introduction to Interprofessional Collaboration. 0 Hours.

This course will introduce interprofessional students to the basic concepts of interprofessional collaboration including values and ethics, roles and responsibilities of healthcare team members, and interprofessional communication tools using the evidence-based national curriculum of TeamSTEPPS. SEM.

GSMC 502. Foundations of Interprofessional Collaboration II: Application Interprofessional Collaboration. 0 Hours.

This course will provide interprofessional students' opportunities to apply key knowledge and skills gained in FIPC I, through role-plays and case-based learning. Students will apply their knowledge of roles and responsibilities of healthcare team members and interprofessional communication tools and continue learning with, from, and about students from other professions. SEM.

GSMC 503. Foundations of Interprofessional Collaboration III: Demonstration Interprofessional Collaboration. 0 Hours.

This course will provide interprofessional students' opportunities to demonstrate key knowledge and skills gained in FIPC I and II, through simulation. Students will demonstrate their interprofessional communication skills, including specific opportunities to utilize TeamSTEPPS tools. Students will also demonstrate their teamwork abilities by working with interprofessional students during the simulation. SEM.

GSMC 803. Introduction to Clinical Research. 1 Hour.

Course will provide a comprehensive overview to clinical research. The student will gain an understanding of how to develop clinical research questions including protocol design and the factors that should be considered in initiating a clinical research study. This will include biostatistical considerations, the recruitment of study participants, regulatory issues, and data management, and defining measures and instruments. Students will gain knowledge of how to define clinical research among the various institutional entities involved with clinical research at the University of Kansas Medical Center such as the Research Institute (RI), General Clinical Research Center (GCRC) and the Human Subjects Committee (HSC). Additionally, one component of the course will focus on how to apply for funding (grantsmanship), critical appraisal of research studies, and how to present research data. Prerequisite: Consent of Instructor. LEC.

GSMC 840. CLINICAL OBSERVATION IN HEALTH CARE FOR BIOENGINEERS. 3 Hours.

This course requires a 6 hour time commitment each week over the semester. During each weekly session the student will observe various medical practitioners in specific health care environments. The course

gives the bioengineer an opportunity to see the inside of medical practice and exposes students to medical questions and challenges that could provide opportunities for engineers to contribute to the improvement of medical practice. Each student must select a concentration for this course from a health care specialty depending on availability. Some specialty options might include: Orthopedic, Radiology, Cardiology, Physical Therapy, etc. Grading will be pass/fail based on participation and journal keeping. Prerequisite: Graduate engineering standing, Consent of instructor. LEC.

GSMC 850. Proteins and Metabolism. 2 Hours.

This course is the first of four lecture units in the first year curriculum of the Interdisciplinary Graduate Program in the Biomedical Sciences. It will cover basic principles of metabolism, protein structure and an introduction to nucleic acids. Prerequisite: Permission of instructor. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. Students must co-enroll in GSMC 852 (Introduction to Biomedical Research). LEC.

GSMC 851. Molecular Genetics. 2 Hours.

This course is the second of four lecture units in the first year curriculum of the Interdisciplinary Graduate Program in the Biomedical Sciences. It will cover basic principles of molecular genetics, DNA replication, DNA repair, transcription and translation. Prerequisite: Permission of instructor. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. Students must co-enroll in GSMC 852 (Introduction to Biomedical Research). LEC.

GSMC 852. Introduction to Biomedical Research I. 2 Hours.

This is the first semester of a one year series in the Interdisciplinary Graduate Program in the Biomedical Sciences. The course is composed of weekly meetings to discuss research problems, methods and current literature. The course will interface with the lectures and students will learn to critically evaluate our scientific knowledge base. The students will be introduced to the tools that are available to obtain and evaluate information. The students will be challenged to identify areas of our scientific knowledge that require further experimentation and clarification. Prerequisite: Permission of instructor. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. Students must co-enroll in GSMC 850 (Proteins and Metabolism) and GSMC 851 (Molecular Genetics). LEC.

GSMC 853. Cellular Structure. 2 Hours.

This course is the third of four lecture units in the first year curriculum of the Interdisciplinary Graduate Program in the Biomedical Sciences. It will cover basic principles of cellular structure and function. Topics include the lipid bilayer, membrane proteins, and cellular organelles. Prerequisite: Permission of instructor. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. Students must co-enroll in GSMC 855 (Introduction to Biomedical Research). LEC.

GSMC 854. Cell Communication. 2 Hours.

This course is the fourth of four lecture units in the first year curriculum of the Interdisciplinary Graduate Program in the Biomedical Sciences. It will cover basic principles of cell communication. Topics include G-protein-coupled signaling, cellular cytoskeleton; cell cycle control; cell death; extracellular matrix; and cancer. Prerequisite: Permission of instructor. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. Students must co-enroll in GSMC 855 (Introduction to Biomedical Research). LEC.

GSMC 855. Introduction to Biomedical Research II. 2 Hours.

This is the second semester of a one year series in the Interdisciplinary Graduate Program in the Biomedical Sciences. The course is composed of weekly meetings to discuss research problems, methods and current literature. The course will interface with the lectures and students will

learn to critically evaluate our scientific knowledge base. The students will be introduced to the tools that are available to obtain and evaluate information. The students will be challenged to identify areas of our scientific knowledge that require further experimentation and clarification. Prerequisite: Permission of instructor. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. Students must co-enroll in GSMC 853 (Cellular Structure) and GSMC 854 (Cell Communication). LEC.

GSMC 856. Introduction to Research Ethics. 1 Hour.

The objective of this course is to introduce students to research ethics. Students will learn and discuss some of the following areas of ethics in research: 1) sources of errors in science, 2) Scientific Fraud, 3) plagiarism and misrepresentation, 4) conflicts of interest, and 5) confidentiality. Prerequisite: Permission of instructor. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. LEC.

GSMC 857. Biographics. 1 Hour.

The objective of the course is to teach students how to organize and present data in a clear and concise manner at national meetings. Students are taught basic principles of organizing data for presentation and then learn through the actual presentation of data in simulated platform sessions held in the course. Videotapes are made of the presentations, and students are then given a constructive critique of their presentation by the instructor and fellow students. Prerequisite: Permission of instructors. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. LEC.

GSMC 858. Introduction to Faculty Research. 1 Hour.

This course was created to provide students with sufficient introduction to the research conducted at KUMC. To facilitate this point, the course is designed as a seminar series. In each session of the series, three faculty members present a brief 20-minute overview of their research programs. The series will help students to select faculty for research rotations and ultimately help them determine which faculty member they will select as a research adviser for their doctoral research. Prerequisite: Permission of instructors. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. LEC.

GSMC 859. Research Rotations. 1-4 Hours.

The course will introduce students to research methods, experimental design, and the types of biomedical research conducted at KUMC. The first research rotation begins halfway through the first semester; the second and third research rotations will occur in the second semester. It is designed to help students determine which faculty member they will select as a research adviser for their doctoral research. Prerequisite: Permission of instructors. Students must be admitted into the Interdisciplinary Graduate Program in the Biomedical Sciences. LEC.

GSMC 860. Introduction to Molecular Medicine. 1 Hour.

Introduction to Molecular Medicine (1 credit hour/semester) is a two semester course, taught every fall and spring semester, primarily for first year MD-PhD students. This course is taught by the Director of the MD-PhD Program, with contributions from other faculty from the basic science and clinical departments. Through lectures, small group discussion, evaluation of primary literature, analysis of scientific data and presentations/discussions with current KUMC faculty, students will be introduced to the process of investigating the molecular and cellular derangements that underlie human disease. Order of topics mirror, to some extent, the subjects of the first-year modules. There will be particular emphasis on the diverse research methods and models systems used to investigate the molecular basis of disease and understanding how such investigations can be translated to answer clinically relevant questions. Students are evaluated by both group activity

and individual preparation and participation. Prerequisite: Enrollment in the MD-PhD Program or Permission of Instructor. LEC.

GSMC 987. Experiential Learning in the Biomedical Sciences. 1-6 Hours.

Four to 16 weeks of experiential learning in a relevant biomedical setting outside of KUMC. Students must identify an outside learning experience and prepare a detailed outline of their activities. The outline must be approved by the instructor prior to enrollment. The goal of the class is to enable students to enhance their research opportunities by expanding their experiences. Examples of outside opportunities are: industry; clinical facilities; non-profit foundations; government programs (NIH, CDC, KBOR, KDHE). Prerequisite: Permission of Instructor, Mentor and Program. RSH.