

## Courses of Instruction for Health Sciences Students

Courses are subject to change, and the University reserves the right to withdraw any course announced. Courses numbered 1–200 are for students in undergraduate programs; courses numbered 201 and above are for students in graduate programs. The number in parentheses after the name of a course indicates the number of credit hours that may be earned.

The following abbreviations are used as course designations for health sciences programs in the School of Medicine and Health Sciences. Abbreviations are listed in the order in which groups of courses appear on the following pages.

<b>HSci</b>	Health Sciences	<b>Nurs</b>	Nursing
<b>CLS</b>	Clinical Laboratory Science	<b>Phrg</b>	Pharmacogenomics
<b>CML</b>	Clinical Management and Leadership	<b>PT</b>	Physical Therapy
<b>CRA</b>	Clinical Research Administration	<b>PA</b>	Physician Assistant
<b>EHS</b>	Emergency Health Services	<b>RAff</b>	Regulatory Affairs
<b>HCQ</b>	Health Care Quality	<b>Sono</b>	Sonography
		<b>SHC</b>	Spirituality and Health Care

### Health Sciences

- 101 Psychosocial Aspects of Health and Illness (3)**  
Comprehensive introduction of the psychological and social aspects of health and wellness, including social foundations of behavior and psychological theories related to health and the impact of illnesses on patients, families, and communities. Emphasis on the development of communication skills and the establishment of caring relationships. Discussions of special situations such as working with dying patients and patients with self-destructive behaviors.
- 102 Pathophysiology (3)**  
Biomedical and scientific framework for the understanding of human disease mechanisms and biologic processes. Overview of infectious, immunologic, cardiovascular, genetic, respiratory, gastrointestinal, neoplastic, reproductive, renal, hematologic, neurologic, and musculoskeletal diseases.
- 103 Health Policy and the Health Care System (3)**  
Incorporates economic theory and policy analysis methodology to analyze the impact of changes in the health care system on the practice of health science professionals and the quality and process of health care. The role of state and federal legislation will be explored, and critical aspects of the U.S. health system are compared to those of other countries. Development of critical thinking skills through review of current medical literature.
- 104 Management of Health Science Services (3)**  
Introduction to management principles as they apply to the delivery of services provided by health science disciplines. Issues addressed include information systems, leadership, team building, fiscal management, human resource management, quality improvement, and management of conflict and change.
- 105 Ethics for Health Professionals (3)**  
An overview of ethics and ethical reasoning in the health professions. Basic issues and requirements of ethically acceptable decision making with patients throughout their lifespan, including patient confidentiality, conflicts of interest, allocation of scarce resources, occupational risks in health care, and professional responsibility for overall quality of care. Provides approaches to ethical problem solving.
- 108 Quality Improvement in Health Care (3)**  
Analysis of the structures in place to enhance the quality of health care delivery and political and economic influences that affect quality improvement programs. Assessment of specific interventions to enhance health care from the perspectives of providers and patients.
- 109 Trends and Innovations in Health Care (3)**  
Examination of new technologies, health care delivery models, and the phenomenon of sophisticated consumers. Assessment of the impact of science, technology, ethics, and government on the provision of health care.

- 110 **Disease Prevention and Health Promotion Concepts (3)**  
An overview of basic public health concepts for health sciences students, including epidemiology, health promotion, and disease prevention. Review of current issues in health promotion.
- 111 **Faith and Health Outcomes (3)**  
Theoretical models used to explain both positive and negative influences of beliefs and behaviors on disease prevention and health care. The growing importance of these factors in medical education and clinical practice; arguments in opposition to this trend.
- 112 **Writing in the Health Sciences (3)**  
Introduction to the health sciences literature. Emphasis on construction, organization, and evaluation of written communication of health sciences information.
- 113 **Informatics in the Health Sciences (3)**  
Introduction to healthcare informatics, including management and clinical information systems and their role in the clinical, administrative, and research arenas of health care.
- 115 **Introductory Biostatistics for Health Science Professionals (3)**  
Basic concepts of biostatistics with application to the health sciences professions. Research design, frequency distributions, descriptive measures, probability, sampling, regression and correlation, analysis of variance, hypothesis development/testing and data organization/analysis options are covered.
- 116 **Genome-Based Medicine and Pharmacology (3)**  
Introduction to basic principles of genetics and pharmacology. The practical applications of human genetics, including new drug development, future trends and perspectives, and ethical, legal, and social implications of genome-based medicine and pharmacology.
- 190 **Independent Study in Health Sciences (arr.)**  
Independent study and special projects involving student-defined learning objectives. Students must get permission of the faculty member who will direct the study.
- 195 **Special Topics in Health Sciences (1 to 3)**  
Topics vary depending on current issues of interest and faculty availability.
- 206 **Clinical Decision Making (2)**  
For students in the post-master's nurse practitioner certificate program and the physician assistant program. Methodological approach to clinical problem solving, with emphasis on interpretation of patient histories, physical examinations, laboratory results, and radiographs. Selection of appropriate pharmacological and nonpharmacological therapies, patient education, counseling, and referral. Students assist in analysis of clinical cases under faculty supervision and learn to evaluate symptoms in relation to pathophysiological changes.
- 221 **Current Issues in Health Professional Practice (3)**  
Current issues facing health professional practice in the United States. Emphasis on health policy and health system changes that have affected the delivery of health care in the last 25 years. Understanding of social, legislative, regulatory, and professional changes and their effects on health professional practice.
- 222 **Applied Clinical Topics in Bioethics (3)**  
Focus on the multidimensional aspects of health care ethics. Topics include issues of end-of-life care, withholding care, informed consent, risk management, and others related to patient-provider relationships. Case studies are used to approach topical areas from the perspective of the health care professional.
- 223 **Topics in Health Care Leadership (3)**  
Theories and styles of leadership, including organizational management and values, strategic planning, communication strategies, managing change, and negotiating conflict in the context of the health care delivery system.
- 233 **Pathology for Health Sciences Students (4)**  
Basic concepts and language of pathology, infectious diseases, and fundamental disease processes. Emphasis on pathogenesis and dynamics of disease. Causation, evolution, and morphology of pathological changes in the principal diseases of each organ system, presented in coordination with clinical lectures in PA 225.
- 237 **Microbiology for Health Sciences Students (2)**  
Fundamental principles and clinical correlations of microbiology and microbial defense.

- 240 **Issues and Trends in Health Systems** (3)  
Analysis of key contemporary issues in U.S. health and social policy that affect the design and structure of the health care system. The health policy process and initiatives that shape care delivery.
- 241 **The Health Care Enterprise** (3)  
Global business principles related to health care systems: management of patient-centered care delivery; marketing, finance, and fiscal management principles; information, technology, regulatory, and quality improvement.
- 270–72 **Research Methods for Health Professionals I–II–III** (3–3–3)  
Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research questions, and identify appropriate inquiry methodologies. Students become familiar with all elements of a research proposal, including those relating to the use of human subjects and informed consent.
- 287 **The Biology of HIV/AIDS** (3)  
The basic science, pathogenesis, natural history, and laboratory identification of the human immunodeficiency virus.
- 291 **Advanced Topics in Health Sciences** (1 to 3)  
Topics vary depending on current issues of interest and faculty availability. Open to undergraduates with permission of the instructor.
- 292 **Teaching with Technology in the Health Professions** (3)  
Same as Nurs 292.
- 293 **Health Education for Individuals and Communities** (3)  
Same as Nurs 293.
- 297 **Independent Study for Health Professionals** (1 to 5)  
Independent study involving analysis of a clinical topic, a patient education project, or an on-site mentored clinical research practicum.
- 300 **Thesis** (2)  
Research project and thesis preparation under advisor. Prior approval by thesis committee required.

## Clinical Laboratory Science

- 118 **Laboratory Operations** (1)  
Basic concepts applicable to all areas of the clinical laboratory. Quality assurance and quality control, laboratory safety, including federal regulations, and related topics.
- 119 **Introduction to Immunologic Fundamentals** (3)  
Fundamental immunologic concepts. Serologic and immunologic procedures as applied to clinical and research situations.
- 120 **Urinalysis and Body Fluids** (1)  
Evaluation of urine and other body fluids for the presence of disease; clinical correlations.
- 121–22 **Clinical Chemistry I–II** (2–2)  
Principles and procedures involved in chemistry analysis of human blood and body fluids. Clinical correlations and pathological aspects of human disease.
- 123–24 **Clinical Microbiology I–II** (2–2)  
Principles of clinical microbiology, with emphasis on pathogenic characteristics, isolation and identification of organisms related to human disease.
- 125–26 **Immunohematology I–II** (1–2)  
Immunological aspects of transfusion of human blood. Emphasis on preparation and administration of blood components.
- 127 **Clinical Immunology** (1)  
Principles of immunologic assays and clinical correlation with human disease.
- 128–29 **Hematology I–II** (2–2)  
Principles of laboratory detection, clinical correlation, and pathophysiology of human blood cell diseases and disorders of hemostasis.
- 130 **Clinical Chemistry Practicum** (4)  
Rotation through the clinical chemistry laboratory.
- 131 **Clinical Microbiology Practicum** (4)  
Rotation through the clinical microbiology laboratory.
- 132 **Hematology, Coagulation, and Urinalysis Practicum** (4)  
Rotation through the clinical hematology, hemostasis, and urinalysis laboratories.

- 133 **Blood Bank and Serology Practicum (4)**  
Rotation through the blood bank and clinical immunology laboratory.
- 134 **Transfusion Service Practicum (3)**  
Rotation through the transfusion service of a hospital.
- 135 **Hematology and Hemostasis Practicum (4)**  
Rotation through the hematology and coagulation laboratories.
- 136 **Clinical Experience I (1)**  
Assessment and necessary supervised clinical experiences in clinical chemistry.
- 137 **Clinical Experience II (1)**  
Assessment and necessary supervised clinical experiences in clinical microbiology.
- 138 **Clinical Experience III (1)**  
Assessment and necessary supervised clinical experiences in clinical hematology, hemostasis, and urinalysis.
- 139 **Clinical Experience IV (1)**  
Assessment and necessary supervised clinical experiences in transfusion medicine and serology.
- 140 **Clinical Laboratory Management (3)**  
Basic concepts of laboratory management, including organizational principles, financial management of resources, decision-making and problem-solving skills, human resource management.
- 141 **Independent Study (arr.)**  
Intensive review of clinical laboratory science, with assigned readings and participation in selected courses in the clinical laboratory science program. Registration by petition.
- 201 **Molecular Biology (3)**  
The structure of macromolecules and their function at the cellular and organismal level. Molecular processes necessary for the maintenance and control of cellular events are examined and interpreted in terms of their physical and chemical properties.
- 210 **Clinical Immunology: Principles and Laboratory Diagnosis (4)**  
Principles of immunology and immuno-hematology as related to discipline of transfusion medicine.
- 213 **Seminar in Immuno-hematology (2)**  
Federal, state, and international regulations that govern the blood bank industry; laboratory research related to blood products; new product and practice guidelines; legal, social, and ethical issues related to transfusion medicine.
- 215 **Research Project (3)**  
Research in the area of transfusion medicine approved by the program director.

## Clinical Management and Leadership

- 140 **Management of Human Resources in Health Science Organizations (3)**  
Builds on concepts introduced in HSci 104. Theory and application of management and leadership as they affect the management of human resources in health sciences organizations. Focus is on leadership, ethics, and organizational dynamics in a changing health care environment.
- 141 **Planning and Marketing in Health Sciences (3)**  
The role of planning and marketing in the management and promotion of health sciences services, products, and organizations. Focus on the theory and application of quality principles in assessment of on-going organizational effectiveness, concepts and techniques of project planning, and methods for identifying and addressing customer needs.
- 142 **Financial Management in the Health Sciences (3)**  
An overview of accounting and financial concepts for management of health sciences organizations. Budgeting, cash management, reimbursement guidelines, and financial management.
- 143 **Current Issues in Health Sciences Management (3)**  
Evaluation of major problem areas in the management of health sciences organizations. Discussions include legal, technological, managerial, organizational, and leadership issues in the changing health care environment.
- 144 **Seminar in Health Sciences Leadership (3)**  
A senior capstone course, integrating the theories and concepts covered in previous course work, with a focus on the identification and resolution of problems

- and opportunities encountered by the health sciences manager. To be taken in the final semester of study or with program director approval.
- 202 **Human Resource Development (3)**  
Role of organizational culture, motivation, communication, and health care teams in the management of clinical organizations. Effective policies and strategies for individual and organizational development.
- 203 **Health Information, Quality, and Outcomes (3)**  
Approaches to medical informatics to support managerial decision making, patient care, and quality improvement in clinical practices. Ethical, legal, and social dimensions of health care information technology.
- 204 **Marketing Clinical Services (3)**  
The marketing process from the perspective of clinical practice managers. Needs assessment; environmental analysis; planning; distribution; pricing; promotion.
- 205 **Case Studies in Clinical Management and Leadership (3)**  
Integrative case-based approach to the analysis of complex problems in the management and leadership of clinical practice services.
- 230 **Hospice and Palliative Care Analysis (2)**  
Analysis and evaluation of hospice and palliative care systems in the United States. The different types of care available for those facing significant chronic or life-limiting illnesses; key issues in developing, implementing, delivering, and accessing hospice and palliative care.
- 231 **Management of Hospice and Palliative Care Organizations (2)**  
Legal, regulatory, ethical, and cultural issues related to managing and delivering hospice and palliative care. Topics include finance, staffing, training, and education.
- 232 **Leadership Topics in Hospice and Palliative Care (2)**  
Synthesis and integration of general management and leadership principles within the context of hospice and palliative care. Development of a comprehensive leadership plan for a specified component of a hospice and/or palliative care organization or process.
- 243 **The Business of Dying (3)**  
The process of dying and the legal, financial, and practical issues faced by families immediately following the death of a loved one. Prepares professional caregivers to explore, educate, and guide families of chronically ill patients and bereft families in coping with the practical issues around an impending death or immediately following the death of a loved one. Wills and trusts, advance directives, powers of attorney, DNRs, living wills, body disposition, and rituals.
- 244 **Loss: Mid-Life to Older Adulthood (3)**  
Psychosocial aspects of aging; effects of aging and ageism; needs of the dying and bereaved elder; the roles of professional and lay caregivers in supporting the dying and bereaved elder; social, community, and clinical support for the older adult.
- 246 **Caring for Caregivers (3)**  
The roles of the professional and lay caregiver are examined toward assisting in establishing personal boundaries, developing effective communication skills, letting go, and self care. Significance of gender differences in caregiving, effective leadership, teamwork, mutual support, and related challenges.
- 274 **Health Economics and Finance (3)**  
Same as Nurs 274.
- 275 **Leadership and Change in Clinical Management (3)**  
Theories and models of leadership and change from a systems perspective. The development of leadership solutions to problems in clinical organizations; integration of all field course work into implementation plans for health care system changes.

## Clinical Research Administration

- 101 **The Basics of Clinical Research (3)**  
Fundamental concepts, trends, regulations, and practices in clinical research. An overview of industry and government practices and policies in the development of patient care products (drug, devices, biologicals, and diagnostics) and treatment protocols. Focus on interactions among scientific, medical, and social needs.

- 102 **The Processes of Clinical Research (3)**  
Introduction to the processes, procedures, and treatment protocols in the development of patient care products, including RO1 applications, clinical trial protocols, institutional review board standards, adverse event monitoring, and the supporting documentation and practices to obtain Food and Drug Administration approval.
- 103 **Good Clinical Practices (3)**  
The organization and management of data, documents, materials, and findings resulting from clinical research as prescribed by governmental institutions, regulatory agencies, industry sponsors, and research organizations. Audit standards and mechanisms are introduced, and practice audits are conducted.
- 104 **The Business of Clinical Research (3)**  
Fiscal and managerial components of clinical research, including the budgeting processes, fiscal management, software applications, legal and contractual issues, and recruitment of personnel and subjects. Examination of all entities involved in clinical research, including drug, device, biological, and diagnostics sponsors; academic medical centers; and contract research organizations, site management companies, physician-run organizations, and health delivery organizations.
- 105 **Selected Topics in Clinical Research (3)**  
Guided readings and study in selected aspects of clinical research administration.
- 106 **Clinical Research Administration Internship (3)**  
The student selects, develops, and executes a project within a clinical research setting at the student's home base to strengthen skills in clinical research, communication, presentation, project management, and decision making. A comprehensive report is required upon completion of the course.
- 107 **Introduction to Monitoring Clinical Trials (3)**  
Introduction to the role of monitoring in clinical research administration to ensure valid, reliable, and accurate clinical data and adherence to good clinical practices by sponsors and study sites.
- 201 **Critical Analysis in Clinical Research (3)**  
Analysis of the clinical research framework.
- 202 **Clinical Trials Management (3)**  
The principles, policies, and practices that impact phase I–IV clinical trials and the development of products. The course integrates regulatory and project management perspectives.
- 203 **Partnership with Human Subjects (3)**  
Strategies for recruitment, retention, and compliance of study participants in clinical research projects.
- 204 **The Clinical Research Industry (3)**  
The stakeholders within the clinical research industry and how they interact to deliver products, services, and results across health care systems.
- 205 **Clinical Investigation (3)**  
Analysis and evaluation of study design strategies and current practices for major therapeutic areas of clinical research (e.g., vaccine development, cardiovascular disease, anti-infectives, CNS, etc.)
- 206 **Clinical Research Funding (3)**  
Federal regulations that impact funding and business practices of clinical research. Trends in clinical research funding and the various funding sources that support clinical research.
- 207 **Gene Therapy (3)**  
The use of gene therapy in humans; analysis of adverse events in relation to benefits and exploration of possible future therapies.
- 208 **International Clinical Research (3)**  
The strategies and methods of clinical research in international settings; cultural and ethical considerations in global clinical research projects.
- 209 **Monitoring Clinical Research (3)**  
A managerial perspective on monitoring activities within clinical research. Analysis of the clinical site, the sponsor, and intermediaries within the process.
- 210 **Medical Writing for Clinical Research (3)**  
A comprehensive analysis of medical writing requirements associated with clinical research.

- 211 **Regulation and Development of Medical Devices (3)**  
Evaluation of the development process and regulatory considerations for devices, consumables, and disposables used in health care.
- 275 **Leadership and Change in Clinical Research Administration (3)**  
A capstone course focusing on the concept of leadership within the contexts of health professionals, health systems, and health policy.

## Emergency Health Services

- 2 **CPR and First Aid (1)**  
Development of the proper techniques of cardiopulmonary resuscitation and first aid. Nationally recognized certification provided.
- 40 **Emergency Medical Technician-Basic (3)**  
EMT–Basic knowledge and skills. Includes basic life support, patient assessment, bleeding control, bandaging and splinting. Successful completion makes student eligible to sit for National Registry certification exam.
- 41 **EMT-Basic Lab (1)**  
Application and practice of EMT–Basic skills.
- 44 **EMT-Basic Recertification (3)**  
Prepares students to recertify as a National Registry EMT–Basic. Includes an “EMT Refresher” class and continuing education program. Laboratory fee, \$50.
- 50 **CPR and First Aid Instructor (1)**  
Lecture and practice to prepare student to teach a nationally recognized CPR and first aid program.
- 58 **EMT Instructor Development (2)**  
Students develop and deliver didactic and skill instruction. Students participate in the day-to-day teaching and management in an EMT–Basic program.
- 104 **Legal Aspects of Emergency Management (3)**  
Legal issues in the delivery of emergency medical services, including abandonment, malpractice, negligence, patient consent, the Freedom of Information and Privacy Acts, the Good Samaritan law, protocol deviation, record keeping, patient refusal of services, and medical control. Emergency medicine legislation and recent court decisions. Prerequisite: HSci 103.
- 107 **Theory and Practice of Research in a Clinical Setting (4)**  
Fundamentals of clinical research methods, design, and analysis related to emergency medicine.
- 108 **Emergency Medicine Clinical Scribe (3)**  
Fundamentals of emergency medicine clinical practice through documentation and management of clinical information. Students participate as members of an emergency medicine team and explore topics related to emergency health care, e.g., practical human anatomy, medical terminology, diagnosis, patient care, medical records, and practice management.
- 109 **Emerging Infections and Bioterrorism: Preparing for Global Outbreaks (3)**  
Principles of the epidemiology of outbreaks, the rise of emerging infectious diseases, and strategies for emergency preparedness from a national and international perspective that includes biosecurity.
- 110 **Emergency Department Critical Assessment and Procedures (4)**  
Expansion of EMT–Basic knowledge and skills for independent performance as a hospital technician; emphasis on the Emergency Department and Intensive Care Units.
- 159 **Paramedic Field Internship (1 to 5)**  
Under direct supervision of various clinical specialists, students have the opportunity to refine and expand paramedicine cognitive and practical skills and to serve as team leader for all types of emergency calls.
- 160 **Disaster Response Planning and Management (3)**  
Planning for and management of multiple-casualty incidents in the prehospital and hospital environment, including development of response plans, triage, medical evacuation procedures, communications, roles of government and the private sector, terrorism, and medical care for mass gatherings. Prerequisite: permission of program director.
- 161 **Medical Management of Hazmat Incidents (3)**  
Hazardous materials and their risks. Identification of hazardous materials and related problems, precautions in approaching the contaminated patient, protective clothing, decontamination, and management of selected hazards.

- 162 **Introduction to the Principles of Tactical Medicine (4)**  
Exploration of the basics of tactical emergency medicine, such as acute care in tactical combat situations and medical operations support of tactical teams.
- 166 **Current Topics (1)**  
Review of the current literature to identify clinical, operational, educational, and administrative issues important in the leadership of EMS.
- 167 **Injury Control Case Studies (3)**  
Concepts of injury control; primary, secondary, and tertiary prevention, including injury surveillance, pathophysiology, and injury risk factors.
- 170 **EMS Systems Design (4)**  
Analysis of EMS system concepts, elements, and performance. Comparison of local, regional, state, and national EMS delivery systems. Methods of determining efficiency and effectiveness.
- 171 **EMS Operations and Management (4)**  
Principles of management and process that contribute to the effectiveness of day-to-day operations within an EMS organization. Topics include human resource management, communications systems, deployment strategies, and risk management.
- 172 **Leadership in EMS Agencies (4)**  
Development of leadership skills in listening, delegation of responsibilities, discipline, and decision making.
- 173 **Special Operations (4)**  
Development and application of a general supervisory template to use when functioning as the special operations section supervisor or coordinator. The National Incident Management System. Mass casualties, technical rescue, hazardous materials; incidents of national consequence.
- 179 **EMS Development and Strategic Planning (5)**  
An integrated capstone course to develop skills in diagnosing EMS organizational problems, formulating and selecting strategic alternatives, and recognizing problems inherent in strategy implementation. Prerequisite: permission of program director.
- 197 **Clinical Internship (1 to 6)**  
Internship experience with a local, regional, national, or international emergency service to gain experience in assisting in the daily clinical practices of the agency's health care system and to increase skills in adapting to diverse clinical settings.
- 198 **Administrative Internship (arr.)**  
Student and host are matched to provide opportunity for experience in administration. Specific learning plan is developed with advisor and host. May include EMS, fire service, public health, education, international, or other appropriate administrative environments. Approval of the program director is required.
- 199 **Independent Study (1 to 3)**  
Objectives, activities, and instructional methodologies are developed with advisor and program director. Approval of the program director is required.
- 201 **Response to High-Impact Emergencies (3)**  
Strategies for an effective response to large-scale and high-impact emergencies examined as the managerial foundation for development of a response policy.
- 202 **Analysis of Emergency Service Systems (3)**  
Analysis of policy, managerial strategy, and organizational structure of emergency service systems. Operational response enhancement/sustainment, intra- and interagency interaction, emergency response coordination across jurisdictional boundaries.
- 203 **Legal and Regulatory Obligations of Emergency Services (3)**  
Laws, regulations, and standards pertaining to emergency services. Implications for organizational policy and response requirements for executives, managers, and supervisors.
- 204 **Public Information Management for Emergency Services (3)**  
Public information management for emergency services executives, managers, and supervisors.
- 205 **Strategic Emergency Response (3)**  
Strategic analysis of counterterrorism response requirements for the emergency service organization. Determination of vulnerabilities and trends; development of operational doctrine.

**275 Leadership and Change in Emergency Services Management (3)**

The concept of leadership within the context of health professions, health systems, and health policy.

**Health Care Quality****201 Building a Quality in Health Care Culture (3)**

Application of leadership and organizational change theories and principles to the implementation of quality and patient safety initiatives. Strategies for developing the culture and infrastructure needed to support patient safety and continuous quality improvement.

**202 The Health Care Quality Landscape (3)**

Analysis of quality and patient safety challenges in U.S. health care with a focus on political and environmental influences.

**203 Quality Improvement Science in Health Care (3)**

Introduction to quality improvement and patient safety theories, models, methods, and tools and their application to quality and safety improvement in health care.

**204 Health Care Quality Analysis (3)**

Application of measurement, data management, and statistical analysis principles to quality improvement and patient safety challenges. Focus on the design of effective measures and the selection of appropriate analysis tools.

**205 Patient Safety Systems (3)**

Examination of the epidemiology and sources of error in health care. Risk assessment; design of processes and systems developed to improve patient safety. Application of process- and technology-based systems to reduce the incidence of error.

**275 Leadership and Change in Health Care Quality (3)**

A capstone course focusing on the concept of leading change within the contexts of health professionals, health systems, and health policy.

**Nursing****110 Transition into the Nursing Profession (2)**

The development of nursing as a profession. Overview of the values and characteristics of professional nursing practice. Legal and regulatory issues; critical reasoning and evidence-based practice; professional ethics and cultural competence. Students keep a journal as a self-reflection tool to facilitate the transition into professional nursing.

**111 Health Assessment: Foundations of Nursing Practice (3)**

Development of the knowledge and skills necessary for conducting comprehensive and need-specific health assessments for individuals in the context of their family and community and for determining areas in which health promotion activities should be implemented or reinforced. Students use structured interviews to elicit health histories and health practices and perform physical examinations in a systematic manner. Identification of a broad range of normal variations through practice with peers in the laboratory setting. Foundational skills of nursing practice in the laboratory setting, including physical mobility, safety, infection control, drug calculation, medication administration, and other health technologies.

**113 Nursing Practice and Critical Reasoning I:****Adult and Aging Acute and Chronic Illness (10)**

The first of five courses that combine didactic and clinical experience. Students are introduced to the values, knowledge, and competencies that are the foundation for safe, evidence-based, professional holistic nursing care of adults with common medical and surgical needs. The classroom component focuses on the expected outcomes and effects of nursing interventions with adults experiencing selected health conditions and the loss associated with compromised health. In the clinical component, students use critical thinking and effective communication skills to deliver care to adults with common medical and surgical needs.

**114 Nursing Practice and Critical Reasoning II:****Adult and Aging Acute and Chronic Illness (3)**

Continuation of nursing interventions with adults experiencing selected psychiatric, neurologic, oncologic, endocrine, sensory, and orthopedic conditions. Didactic and clinical experience.

- 115 **Nursing Practice and Critical Reasoning III: Maternity and Women's Health Care (3)**  
Nursing interventions used in health promotion, risk reduction, and clinical decision making and management. Women's health issues, perinatal care of mothers and infants, and gynecological health. Men's reproductive health. Didactic and clinical experience.
- 116 **Nursing Practice and Critical Reasoning IV: Children and Families (3)**  
Focus on families with usual childhood issues and with children who require acute and chronic care. Working with persons of diverse backgrounds, nursing colleagues, and other members of the interdisciplinary team, students prioritize and provide nursing care in hospital and community-based settings. Didactic and clinical experience.
- 117 **Nursing Practice and Critical Reasoning V: Epidemiology and Community Health Nursing (3)**  
Introduction to principles of epidemiology and the roles and responsibilities of nurses in population-based health systems. Emphasis on vulnerable populations locally, nationally, and globally. Epidemiologic, demographic, economic, and environmental health factors used to identify community-oriented strategies aimed at primary, secondary, and tertiary levels of prevention. Didactic and clinical experience.
- 118 **Pharmacology: Pathophysiology Approach (5)**  
Basic principles of pharmacology and medication administration. Drug mechanisms and physiological factors of disease processes.
- 119 **Patient Safety and Health Care Quality (3)**  
The processes and skills needed to provide safe, high-quality nursing care. Critical competencies of patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics.
- 120 **Capstone Experience (Transition into Practice) (6)**  
Culminating experience in a medical surgical practice providing complex nursing care to culturally diverse and vulnerable populations. Specialty clinical experience is available in selected institutions.
- 180 **Dimensions of Professional Nursing (3)**  
For RNs who hold a bachelor's degree in another field.
- 201 **Theoretical Foundations of Nursing (3)**  
Evaluation and analysis of the theoretical foundation of nursing. Overview of various philosophical schools of thought, with emphasis on ontology and epistemology toward development of a framework for practice.
- 202 **Concepts in Population Health (3)**  
Integration and synthesis of concepts associated with quality of care, health promotion, disease prevention, and chronic health problems in communities, the general population, and specific population groups. Issues of culturally diverse and vulnerable populations.
- 203 **Nursing Leadership (3)**  
Through a self-reflection process, students learn evidence-based leadership skills as a core competency in nursing to improve quality in patient care and to strengthen nursing as a profession. Theories of leadership, skills building through mentoring and communication, team building techniques, and related topics.
- 220 **Advanced Physiology and Pathophysiology (3 or 4)**  
System-focused advanced physiology and pathophysiology, analyzing health deviations across the life span. Interpretation of changes in normal function that result in symptoms indicative of illness. This systematic assessment is foundational to clinical decision making and management of health deviations.
- 222 **Health Assessment and Diagnostic Reasoning (2 or 3)**  
Development of skills needed to collect data for comprehensive health assessments. Advanced health assessment and diagnostic reasoning skills are applied during a clinical practicum.
- 223 **Primary Care Seminar (2)**  
Integration of content from pathophysiology, pharmacology, health assessment, and diagnostic reasoning with primary care management principles.
- 224 **Primary Care of the Adult (8)**  
Advanced concepts of primary care conditions in the adult patient.

**225 Assessment and Management of the Adult and Older Adult (8)**

Theoretical and practical foundations of primary care of the adult and older adult with chronic health problems. Advanced decision making, health assessment, health promotion, diagnosis, and patient management, including those from culturally diverse backgrounds.

Nurs 226, 227, and 228 are for currently certified nurse practitioners or nurse midwives in the family nurse practitioner post-master's certificate program. Nurs 230–31 and 232 are for M.S.N. and D.N.P. students in the family nurse practitioner program and for students in the post-master's certificate program who are not currently certified as nurse practitioners or nurse midwives.

**226 Primary Care of the Family (5)**

Theoretical and practical foundations of family primary care.

**227 FNP Clinical Practicum (1 to 7)**

Mentored clinical experience under faculty supervision to advance clinical skills and competencies.

**228 Advanced Family Primary Care (5)**

Seminar and clinical practicum that focuses on the integration of the family nurse practitioner role through the application of family theory and evidence-based practice in primary care settings.

**230–31 Family Nurse Practitioner I–II (8–8)**

Didactic and clinical experiences in family nurse practitioner care focusing on common and chronic problems across the lifespan.

**232 Family Nurse Practitioner III (3)**

Clinical practicum and seminar focused on professional issues: role development, certification, ethical practice, interprofessional collaboration, and health care reimbursement as related to current clinical experience.

**234 Pharmacology for Nursing (3)**

Principles of pharmacology and the major drug classifications and their applications are reviewed within the science of nursing. Effects of selected drugs on all systems are considered in detail. Implications of the actions of these drugs for appropriate prescribing and administration.

**256 Introduction to Palliative Care (3)**

Study of the experience of death and dying from a historical and cross-cultural perspective. Introduction to philosophy, principles, and practices of palliative care for patients and families facing serious illness, dying, and death.

**274 Health Economics and Finance (3)**

Issues of health care economics, financial management, and budgeting that relate to managerial decision making. Applied financial management, management control systems, budgeting, staffing, and cost accounting. Same as CPM 274.

**275 Leadership and Change in Nursing (3)**

A capstone course focusing on the concept of leadership within the contexts of health professionals, health systems, and health policy.

**276 Foundations of Palliative Care (3)**

Overview of the foundations of palliative care. Serious illness and/or end-of-life care of individuals and their families. The philosophy, theory, evidence base, standards of care, and interdisciplinary aspects of a comprehensive and compassionate health care system.

**277 Palliative Care: Pain and Suffering (3)**

Pain and symptom management in palliative and end-of-life care. Advanced care planning with patients and their families that emphasizes ethical and clinical decision making.

**278 Palliative Care: Chronic Illness Care (2)**

Assessment and management of illness trajectories for the chronic illnesses that are leading causes of death in the United States. Focus on enabling patients, their families, and health care professionals to anticipate and prevent/reduce adverse symptoms from life-threatening serious illness to maximize the quality of life.

**279 Palliative Care Practicum I (1 to 4)**

Practice within an interdisciplinary healthcare team to integrate concepts from the core courses to the holistic management of suffering, pain, and other symptoms.

**280 Palliative Care Practicum II (1 to 4)**

Integration of palliative care management for complex physical, psychological, ethical, social and spiritual issues, and grief reactions across many settings and communities.

- 281 **Palliative Care: Leadership and Management (2)**  
Preparation for leadership within the health care team to foster quality palliative care, policy and program development, financial management, and access to palliative care for all individuals, families, and communities.
- 291 **Addiction and Change (3)**  
Principles of addiction and change with emphasis on correlations between changes in behavior and recovery from addiction.
- 292 **Teaching with Technology in the Health Professions (3)**  
Application of instructional design principles to the development of learner-centered, technology-based educational programs by health professionals. Same as HSci 292.
- 293 **Health Education for Individuals and Communities (3)**  
Application of principles of teaching and learning to the education of patients, their families, and their communities. Same as HSci 293.
- 401 **Organizational and Interdisciplinary Concepts in Nursing (3)**  
The knowledge and skills nurses need to contribute to shaping the future of health care. Health care delivery systems, the nurse's role in interprofessional/interdisciplinary teams, and organizational development from a nursing perspective.
- 402 **Knowledge Management in Health Care (3)**  
The use of knowledge management and information technology as applied to health care. Strategies to improve the efficiency and effectiveness of health care with the use of technology.
- 403 **Translating Research into Practice (3)**  
Models and processes of evidence-based practice. Systematic reviews, evidence-based practice guidelines, meta-syntheses, and meta-analyses. A project involves quantitative synthesis of a research problem.
- 404 **Health Services Research and Policy for Nursing (3)**  
Methods for evaluating the effectiveness, efficiency, and equity of health care and nursing services delivery in terms of legal and regulatory requirements. Approaches to measuring relevant structures, processes, and outcome variables.
- 405 **Health Care Quality Improvement (3)**  
A multidisciplinary background for the science of health care quality improvement. Data-driven methods for identifying and solving quality issues. Intervention strategies that contribute to continuous quality improvement.
- 406 **Field Experience in Advanced Nursing Practice (3)**  
A mentored experience, under faculty supervision, in which D.N.P. competencies can be mastered in an area of the student's choice. May be repeated once for credit.
- 407 **Grant Writing (3)**  
Formulation of a fundable project or study, identification of potential funding sources, and development of the elements in a proposal, including problem statement, work plan, resource plan, evaluation methods, and budget.
- 498 **Clinical Research Project Proposal (3)**  
This course may be taken twice for credit.
- 499 **Clinical Research Project (3)**  
This course may be taken four times for credit.

## Pharmacogenomics

- 141 **Molecular Biology for Pharmacogenomics (4)**  
Fundamentals of molecular biology and genetics as they relate to pharmacogenomics.
- 142 **Molecular Techniques for Pharmacogenomics (2)**  
Basic molecular biological techniques as they apply to pharmacogenomics research.
- 151 **Introduction to Pharmacy Practice Lab (1)**  
Computer-based clinical decision-making support systems. Emphasis on the acquisition of practical information management skills, including database management, information retrieval, and computer-based communication (computer conferencing, electronic mail, list servers, and news groups).
- 152 **Pharmaceutics I (2)**  
The system of weights and measures and the arithmetic and mathematical expertise required for the compounding, dispensing, and utilization of drugs. Basic technical aspects of dispensing drugs; medical terminology. Lectures, case presentations, and drill and practice (problem sets and computer-based exercises).

- 153 **Pharmaceutics II (5)**  
The legal, practical, and scientific bases of drug products and pharmaceutical delivery systems. Physiochemical theories, terminology, pharmaceutical skills, and interpretation of the formulation and performance of pharmaceutical products. Laboratory component.
- 154–59 **Integrated Basic Health Sciences, Modules I–VI (2 each)**  
Anatomy, physiology, biochemistry, immunology, and biotechnology are combined into one comprehensive course taken over six semesters.
- 160–61 **Integrated Basic Health Sciences Laboratory I–II (1–1)**  
Laboratory experiences to integrate anatomy, physiology, biochemistry, immunology, and biotechnology. Students conduct experiments, usually in small groups, that illustrate those concepts in the basic sciences that are particularly relevant to pharmacists.
- 162 **Service Learning Project (3)**  
Students undertake a service learning project under the supervision of a health care provider in the community. Potential projects include brown bag seminars for the elderly, meals-on-wheels, migrant labor camps, home health care agencies, hospice, and support groups.
- 163 **Pharmacogenomics Essentials (3)**  
The ways in which an individual's genetic makeup influences the response to drugs, including the variable side effects that often occur in traditional courses of drug therapy. How inherited factors can affect the kinetics and dynamics of drugs, such as variations in drug-metabolizing enzymes, drug transporters, and drug receptors.
- 165 **Patient Counseling and Communications (2)**  
Effective methods for creating positive, therapeutic relationships with patients and colleagues through the application of communication skills and other behavioral interventions.
- 166 **Biomarkers and Drug Development (2)**  
Discovery, development, and qualification of novel biomarkers for improved drug therapies.

## Physical Therapy

- 401 **Physiology (3)**  
Normal function of the major organ systems of the human body and related concepts of rehabilitation medicine.
- 402 **Exercise Physiology (2)**  
Lecture/laboratory. Effects of exercise in healthy individuals and special populations, including aged and immobilized patients and those with neuromusculoskeletal deficits.
- 403 **Functional Anatomy (5)**  
Lecture/laboratory. Human gross anatomy with cadaveric dissection. Clinical correlations. Normal structures and functional relationships. Common abnormalities and individual and age-related differences.
- 404 **Kinesiology (4)**  
Lecture/laboratory. Kinematics and kinetics of movement. Normal and pathological mechanics of functional movement, including deficits in musculoskeletal system, posture, and gait. Interventions and functional outcomes.
- 405 **Functional Neuroanatomy and Electrodiagnostics (3)**  
Lecture/laboratory. Normal structure and function of the nervous system across the life span. Injury to neural structures; response to injury and rehabilitation. Electrodiagnostics related to physical therapy. Clinical correlations.
- 406 **Clinical Medicine and Pharmacology (4)**  
Systems approach to diseases requiring physical therapy. Pharmacological principles and impacts of certain pharmacological agents on physical therapy intervention. Drug interactions, systems review, and “red flags” requiring physician referral.
- 407 **Medical Imaging (1)**  
Principles of medical imaging related to physical therapy management, including diagnosis and intervention planning.
- 411 **Foundations of Examination (4)**  
Lecture/laboratory. Examination within the patient/client management model of physical therapy. Development of proficiency in basic systems review, selection and administration of tests and measurements, and diagnostic classifications.

**412 Foundations of Interventions (3)**

Lecture/laboratory. Intervention within the patient/client management model of physical therapy. Development of proficiency in basic patient care skills and selection and administration of therapeutic exercise.

**413 Physical and Electrical Modalities (3)**

Lecture/laboratory. Administration of physical, thermal, mechanical, and electrical interventions consistent with patient diagnosis and prognosis. Critical appraisal of the literature to apply best evidence to practice and clinical decision making.

PT 414 through 418 are lecture/laboratory courses developing skills in analysis and synthesis of patient/client data and best evidence to determine diagnostic classification, develop and implement plan of care, and select outcome measures.

**414 Management of Cardiopulmonary Dysfunction (3)**

Physiology and pathophysiology of the cardiopulmonary system as basis for management of the patient/client with cardiopulmonary dysfunction. Focus on health promotion and disease prevention.

**415 Management of Musculoskeletal Dysfunction I (4)**

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to the extremities.

**416 Management of Musculoskeletal Dysfunction II (2)**

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to spinal dysfunction.

**417 Management of Integumentary Dysfunction (1)**

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with integumentary impairments and functional limitations as well as peripheral vascular, metabolic, and immune system impairments.

**418 Management of Neuromotor Dysfunction (4)**

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for adults with neuromotor impairments and functional limitations.

**420 Pediatrics (4)**

Lecture/laboratory. Development issues related to pediatric impairments and functional limitations. Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for children with neuromuscular and musculoskeletal dysfunction. Psychosocial, ethical, and legal factors.

**421 Women's Health (1)**

Lecture/laboratory. Physical therapy for issues related to women's health within the patient/client management model.

**422 Geriatrics (2)**

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for the geriatric population. Typical age-related changes in function. Outcome measures for neuromotor, musculoskeletal, and cardiopulmonary dysfunction in the aging population. Comorbidities; psychosocial, ethical, and legal factors.

**423 Prosthetics and Orthotics (2)**

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity (e.g., work, play, and community reintegration) of persons with functional limitations. Prescription, fabrication, and fitting of prosthetic and orthotic devices.

**451 Dimensions of Professional Practice (3)**

Personal and interpersonal dimensions of health care. Professional practice expectations and six dimensions of health (i.e., physical, emotional, intellectual, spiritual, occupational, and social).

**452 Teaching in Physical Therapy Practice (2)**

Principles and strategies for effective teaching in academic and clinical environments. Patient/client, peer, and professional presentations.

- 453 **Ethical and Legal Issues in Patient Care** (1)  
Ethical and legal issues related to physical therapy and consistent with the core values of the profession. Decision-making models. Legal and ethical responsibilities within the patient/client management model.
- 454 **Health Promotion and Wellness** (1)  
The role of the physical therapist in health promotion and disease prevention across the life span. Focus on screening, client education, and traditional and non-traditional strategies for the promotion of healthy lifestyles.
- 455 **Administration and Management in Physical Therapy Practice** (2)  
Administration and practice management, including marketing, fiscal management, billing, reimbursement, and administrative procedures related to physical therapy practice.
- 456 **Health Policy and Advocacy** (1)  
Introduction to health care policy as related to the profession of physical therapy. Policy development, macro and micro health policy.
- 457 **Capstone Seminar** (1)  
Exploration of professional practice issues, including lifelong learning. Professional electronic portfolios presented. Assessment of educational experiences focusing on quality improvement and professional development.
- 461–66 **Clinical Conference I–VI** (1 each)  
Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.
- 481–82 **Community Practicum I–II** (1–1)  
Interdisciplinary Student Community-Oriented Prevention Enhancement Service (ISCOPES). Community health, health promotion and wellness, cultural competence, continuous quality improvement, and team building through participation in a community health service learning project. Individual and collective outcomes assessed.
- 483–84 **Clinical Immersion I–II** (1–1)  
Part-time physical therapy clinical experiences in a range of clinical settings. Supervised integration and implementation of components of the patient/client management model and professional practice expectations in preparation for full-time clinical internships.
- 487–89 **Clinical Internship I–II–III** (4–6–7)  
Full-time physical therapy clinical experiences in a range of clinical settings. Integration and implementation of all aspects of patient/client management, professional practice expectations, and professional management expectations. Progress from close supervision to independence in the management of patients with non-complex and complex problems across the life span.
- 490 **Externship Elective** (0 to 8)  
Interested students can apply for consideration of an externship in advanced clinical practice, teaching, research, or governmental affairs. Credit varies based on the length of stay and demands of the externship.

## Physician Assistant

- 116 **Medical Terminology** (0)  
Autotutorial completed before entering the physician assistant program. Terminology and vocabulary basic to all areas of medical science, hospital service, and health sciences specialties.
- 215 **Community Service Curriculum** (3)  
Introduction to community-based services in the Washington metropolitan area. Students participate at selected sites arranged by the program faculty.
- 219 **The Role of the Physician Assistant in American Health Care** (2)  
The history, development, and current status of the physician assistant profession within the context of the U.S. health system, such as practice roles, legal issues, and economic aspects of the profession.
- 225 **Clinical Medicine** (5)  
Interdisciplinary course in the theory of medicine using an organ system approach. Clinical findings and pathophysiology for a wide spectrum of diseases. Diagnosis and management of diseases in a variety of medical and surgical specialties.

- 229 **Human Behavior** (2)  
Basic knowledge of psychiatry needed to enter clinical practice. Mental status examination as a tool of clinical assessment. Approaches to understanding and working with patients with mental health conditions.
- 234–35 **Clinical Assessment I-II** (2–2)  
Patient interviewing and physical examination skills; documentation.
- 237 **Clinical Ethics** (1)  
A framework for using ethical principles to make informed health care decisions.
- 245 **Introduction to Primary Care** (2)  
Principles of primary care medicine taught via the common health problems seen through various stages of life. Focus on health promotion, disease prevention, screening, patient education, and counseling.
- 246 **Clinical Applications** (3)  
Review of signs and symptoms, accompanying physical findings, and methods for diagnosis and treatment of a spectrum of emergent illnesses. Development of skills used in the clinical year, including suturing, gowning and gloving, CPR and ACLS certification, cast application, intubation, and catheterization. Basic radiology.
- 248 **Introduction to Electrocardiography** (1)  
Fundamentals of electrocardiography and interpretation of basic EKG patterns. Avoiding common errors in taking and reading EKGs; identification of normal and abnormal wave patterns. Effects of drugs and electrolyte imbalance on EKG patterns.
- 250–52 **Evidence-Based Medicine I-II-III** (1 each)  
Advanced application of research and statistical and evidence-based medicine concepts, with emphasis on studies assessing therapeutics, diagnostics, prognosis, and etiology.
- PA 260 through 268 are required clinical rotations for second-year physician assistant students. Each course is a six-week rotation (except PA 267, which is four weeks), with supervision provided by attending or staff physicians and PAs.

260 **Long-Term and Palliative Care Clinical Practicum** (2)

261 **Inpatient Medicine Clinical Practicum** (2 to 4)

262 **Ambulatory Care Clinical Practicum** (2 to 4)

263 **Surgical Inpatient Clinical Practicum** (2 to 4)

264 **Women's Health Clinical Practicum** (2 to 4)

265 **Pediatrics Clinical Practicum** (2 to 4)

266 **Emergency Medicine Clinical Practicum** (2 to 4)

267 **Behavioral Medicine Clinical Practicum** (2 to 4)

268 **Elective Clinical Practicum** (2 to 4)

269 **Final Clinical Practicum** (2 to 6)

Capstone course required rotation of all PA students in the final semester. With faculty approval, students choose the site for this seven-week rotation.

280 **Surgical Specialty Practice** (4)

Advanced techniques and management of selected conditions encountered in general surgery and surgical subspecialty settings.

281 **Surgical Skills Lab** (2)

Surgical techniques covered include advanced knot tying, placement of central lines and chest tubes, thoracocentesis, and arterial cannulation. Emphasis on laparoscopic surgery techniques.

299 **Independent Study** (arr.)

Clinical rotation chosen as an elective by the student, with faculty approval. Learning objectives are developed by students and reviewed by faculty prior to the start of the rotation. Research paper required at completion of rotation.

## Regulatory Affairs

201 **Analysis of Regulatory Affairs** (3)

Analysis and evaluation of regulatory affairs processes, guidelines, and requirements that impact medical products (drugs, devices, and biologics) with respect to U.S. and global development. Topics include the roles of Food and Drug Administration and other major Department of Health and Human Services agencies in shaping the regulatory environment.

- 202 **Regulatory Strategy in the Development of Drugs and Biologics (3)**  
Development and evaluation of regulatory affairs strategies that support drug and biologic development. Topics include research science, study design, master file, risk/benefit analyses, product specifications, and milestone identification.
- 203 **Regulatory Strategy in the Development of Devices and Diagnostics (3)**  
Development and evaluation of the regulatory affairs strategies that support device and diagnostics development. Topics include research science, study design, master file, risk/benefit analyses, product specifications, and milestone identification.
- 204 **Integration of Regulatory Science (3)**  
Integration and synthesis of regulatory science sources in the evaluation and assessment of regulatory strategies. Topics include post-marketing surveillance, protocol development, data source mining, and evaluation and assessment of regulatory submissions.
- 205 **Regulatory Affairs Compliance (3)**  
Analysis and evaluation of regulatory affairs compliance strategies and guidelines. Topics include oversight, pre- and post-marketing compliance of medical products, labeling, advertising, and use.
- 275 **Leadership and Change in Regulatory Affairs (3)**  
Theories and models of leadership and change from a systems perspective. Development of a system-wide proposal for a global solution to a regulatory affairs issue; integration of all field course work into implementation plans for health care system change.

## Sonography

- 101 **Scan Lab: Abdominal Sonography (1)**  
Basic abdominal sonography scanning skills.
- 102 **Scan Lab: Ob/Gyn Procedures (1)**  
Skills of basic pelvic scanning of the non-gravid female; recognition of basic sonography of pregnancy, working with videotapes, CD-ROM, and other resources of obstetrics imaging.
- 103 **Scan Lab: Vascular Technology Procedures (1)**  
Basic vascular sonography and vascular technology skills.
- 104 **Scan Lab: Echocardiography (1)**  
Basic echocardiography skills.
- 112–17 **Sonography Clinical Practicum (1 to 3 each)**  
Clinical rotations in diagnostic medical sonography. Students perform supervised sonographic examinations in abdominal, vascular, ob/gyn, and/or cardiac departments.
- 140 **Practical Approach to Diagnostic Ultrasound (3)**  
Introductory course for non-majors. Basics of diagnostic ultrasound with an emphasis on applications, ultrasound physics, scanning fundamentals, and cross-sectional anatomy for general, cardiac, and vascular ultrasound.
- 141 **Introduction to Physics of Sonography (3)**  
Fundamental principles of the physics of two-dimensional and Doppler sonography; generation of ultrasound images; artifacts, bioeffects, and instrumentation.
- 143 **Abdominal Sonography (3)**  
Abdominal sonography, including anatomy, pathology, scan techniques, clinical signs and symptoms of disease, and interpretation of normal and abnormal sonograms.
- 144 **Obstetric Sonography (3)**  
Obstetric sonography, including biometry and sonographic evaluations of fetal pathology.
- 145 **Pelvic Sonography (2)**  
Gynecological sonography; anatomy and pathology of the female pelvis; analysis of transabdominal and endovaginal sonograms.
- 146 **High-Resolution Sonography (2)**  
High-resolution sonography, including sonography of the breast, neonatal head, thyroid, testes, and prostate. Innovations in sonography instrumentation and applications.
- 147–48 **Echocardiography (2–3)**  
Cardiac anatomy and pathology; protocols and techniques for the routine echocardiographic examination. Valvular disease, hypertensive heart disease,

- cardiomyopathy, pericardial disease, neoplasms, ischemia, aortic disease, prosthetic devices, transplants, and adult congenital heart disease.
- 151–52 **Vascular Technology I–II (3–2)**  
Vascular sonography principles and instrumentation; hemodynamics of the venous and cerebrovascular systems. Principles and instrumentation of the peripheral arterial system. Normal and pathologic conditions.
- 155 **Practice of Sonography (1)**  
A senior-level interdisciplinary seminar on the clinical practice of diagnostic medical sonography. Students analyze case studies of progressively increasing complexity from the clinical arena. Cases contributed by both faculty and students from current or recent clinical rotations. May be repeated for credit.
- 161 **Comparative Imaging (2)**  
Senior seminar in which students participate in comparative analysis of images obtained in various diagnostic modalities, e.g., planar radiography, nuclear medicine, MRI, CT, and sonography.
- 162 **Multiplanar Sectional Anatomy (3)**  
Cross-sectional anatomy of the whole body with particular emphasis on regions of interest to sonographic imaging.
- 163 **Fetal Echocardiography (3)**  
Cardiac embryology fetal circulation, congenital structural cardiac malformation, fetal heart failure, and corresponding sonographic assessment.
- 186–88 **Senior Project I–III (1 each)**  
Over three semesters and working in teams, students develop and implement a research or service project, and write a paper of publishable quality.
- 194 **Seminar in Ultrasound Physics (1)**  
Senior seminar in physics and instrumentation of diagnostic ultrasound imaging, building on the didactic and clinical foundations of introductory courses in the program and engaging in critical analysis of key concepts in medical applications of ultrasound imaging technologies, preparing students for national Registry examinations in ultrasound physics.
- 195–98 **Seminar in Ultrasound (1 each)**  
Seminar in clinical correlation, critical analysis, sonographic assessment, differential diagnosis, and correlative imaging of the pathology of the abdomen and superficial structures, of obstetric and gynecologic pathology, of peripheral and visceral vascular pathology, and of cardiac pathology. Builds on didactic and clinical foundations in the program.

## Spirituality and Health Care

- 301 **Foundations of Spirituality in Health Care (3)**  
The philosophical, ethical, and theoretical foundations of integrating spirituality and health care, viewed through current research in the field.
- 302 **The Role of Spiritual Beliefs and Practices in Health Care (3)**  
Synthesis of the diverse components of spirituality and how they impact the delivery of patient-centered health care.
- 303 **Human Development in Spirituality and Health (3)**  
The frameworks of psychological and spiritual development; how developmental stages impact spirituality and health in dealing with life cycle events. Development of strategies to identify and facilitate spiritual growth in health and illness.
- 304 **Practical Methods for Providing Spiritual Care (3)**  
Integration of principles and methods in spirituality and patient-centered care.
- 305 **Spirituality and Health Professions Education (3)**  
Strategies for design and implementation of instruction in spirituality and health in health care settings.

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The following courses are taught in the Health Sciences Programs.

- Anat 215 **Anatomy for Health Sciences Students (4)**  
Gross structure of the human body, including musculoskeletal, nervous, endocrine, cardiovascular, respiratory, gastrointestinal, urinary, and reproductive systems. Laboratory work is limited to prosected specimens.

- Bioc 211 Biochemistry for Health Sciences Students (3)**  
Basic concepts of biochemistry and their relation to health sciences.
- Phar 170 Introduction to Pharmacology and Toxicology (3)**  
Basic principles underlying the absorption, distribution, metabolism, and excretion of drugs and toxic substances. Mechanisms of toxicity.
- Phar 190 Principles of Molecular Medicine (3)**  
Basic molecular, cellular, and physiological factors with reference to the formation and progression of cancer and infectious disease. Principles of organ system function and pathophysiology, with focus on therapeutic intervention.
- Phar 207 Pharmacology for Health Sciences Students (3 or 4)**  
Drug disposition. Autonomic nervous system, cardiovascular and gastrointestinal drugs. Psychopharmacology. Analgesics, sedatives, anticonvulsants. Chemotherapy, toxicology, endocrinology.
- Phar 208 Pharmacology in Clinical Pathophysiology (1)**  
The pharmacology of disease management.
- Phyl 211 Physiology for Health Sciences Students (3)**  
Functional processes, including cellular, muscular, cardiovascular, renal, pulmonary, gastrointestinal, endocrine, and nervous systems.