

# HEALTH SCIENCES PROGRAMS (HSCI)

## Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-level undergraduate courses that can also be taken for graduate credit with permission and additional work assigned
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

### **HSCI 1101. Careers in Health Care. 1 Credit.**

Introduction to health professions and an orientation to the U.S. health care system; training and educational pathways required for various health professions.

### **HSCI 1102. Medical Terminology I. 3 Credits.**

First in a two-course series introducing medical vocabulary and terms related to the anatomy, physiology, pathology, and treatment of select systems; the gastrointestinal, respiratory, cardiovascular, blood, lymphatic, integumentary, skeletal, and muscular systems. Recommended background: Prior completion of a course in biology.

### **HSCI 1103. Medical Terminology II. 3 Credits.**

Second in a two-course series covering medical vocabulary and terms related to the anatomy, physiology, pathology, and treatment of select systems; the nervous, urinary, reproductive, endocrine, ophthalmic, and otolaryngologic systems. Prerequisite: HSCI 1102. Recommended background: prior completion of a course in biology.

### **HSCI 1106. Introduction to Biotechnology for Health Sciences. 3 Credits.**

Concepts in biotechnology with special emphasis on issues and advances in medicine and health care. Restricted to Students in SMHS.

### **HSCI 1107. Introduction to Sterile Processing. 3 Credits.**

Concepts and terminology in perioperative care; basic surgical instrumentation, inventory control, and sterile processing standards. Restricted to SMHS students. Prerequisites: HSCI 1101, HSCI 1102 and HSCI 1103.

### **HSCI 1108. Introduction to Food and Nutrition. 3 Credits.**

Introduction to food and nutrition and their impact on health and wellness; nutrients and metabolism, dietary and food practices, obesity, nutrient requirements across the lifespan, access to proper nutrition, and commercial messages in nutrition and advertising. Prerequisites: HSCI 1102 and HSCI 1103.

### **HSCI 1109. Introduction to Surgical Sciences. 3 Credits.**

Introduction to surgical technology; terminology, sterilization processes, surgical instrumentation, techniques, and basic case management. Restricted to SMHS students. Prerequisites: HSCI 1102 and HSCI 1103.

### **HSCI 1110. Concepts of Pathophysiology and Health. 3 Credits.**

Introduction to concepts of pathophysiology and health with special emphasis on issues and advances in nursing and health care. Restricted to students in the Health Sciences program. Prerequisites: HSCI 1102 and HSCI 1103.

### **HSCI 1114. Foundations of Nursing I. 3 Credits.**

Fundamental concepts of nursing with perspectives on the nursing profession as a cornerstone of the contemporary healthcare landscape.

### **HSCI 1115. Foundations of Nursing II. 3 Credits.**

Builds on material introduced in HSCI 1114. Application of nursing theory, assessment, and critical thinking to navigate common conditions and issues facing the contemporary healthcare landscape. Recommended background: Prior completion of HSCI 1114.

### **HSCI 2050. Foundations of Health Equity. 3 Credits.**

The cross-cutting nature of the social determinants of health and clinical and biomedical implications in practice and research settings. This is the prerequisite course to begin the health equity micro-minor.

### **HSCI 2100. Writing and Composition in the Health Sciences. 3 Credits.**

Basic writing mechanics and methods for developing paragraphs and essays; conceptualizing papers, such as crafting outlines and assessing sources; and basics of APA style. Students practice analyzing writing through peer review exercises.

### **HSCI 2101. Psychosocial Aspects of Health and Illness. 3 Credits.**

Comprehensive introduction to the psychological and social aspects of health and wellness.

### **HSCI 2102. Pathophysiology. 3 Credits.**

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.

### **HSCI 2105. Current Issues in Bioethics. 3 Credits.**

Basic issues, approaches, and requirements of ethically acceptable decision making with patients, including patient confidentiality, conflicts of interest, allocation of scarce resources, occupational risks in health care, and professional responsibility for overall quality of care.

### **HSCI 2107. Healthcare in Literature. 3 Credits.**

How literature, medical journals, and film form or express society's opinions on complex healthcare issues, and what these opinions mean for practitioners and patients.

### **HSCI 2109. Trends and Innovations in Health Care. 3 Credits.**

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.

**HSCI 2110. Disease Prevention and Health Promotion Concepts. 3 Credits.**

Students create a proposal to engage a local community in program planning to achieve health equity. The emphasis is on achieving health equity through disease prevention and health promotion to advance community, population, and public health.

**HSCI 2111. Development of the Health Care Professions. 3 Credits.**

The evolution of the health care professions; basic information pertinent to all aspects of the support and delivery of health care services; and legal and professional considerations related to health occupations.

**HSCI 2112. Writing in the Health Sciences. 3 Credits.**

Introduction to the health sciences literature. Emphasis is on construction, evaluation and organization of written communication of health sciences information.

**HSCI 2112W. Writing in the Health Sciences. 3 Credits.**

Introduction to writing that emphasizes construction, evaluation, and organization of written communication of health science information. A blend of independent study and group work in which students perform as writers, reviewers, and editors. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

**HSCI 2113. Informatics in the HSCI. 3 Credits.**

Introduction to health care informatics, including management and clinical information systems and their role in administration, clinical, and research arenas in health care.

**HSCI 2117. Introduction to Statistics for Health Sciences. 3 Credits.**

Foundational concepts in descriptive and inferential statistics, including probability, sampling distribution, estimation, correlation, t-Test, simple linear regression, and chi-square. Application of statistical concepts and methods within the health sciences.

**HSCI 2118. Global Women's Health. 1 Credit.**

The social, cultural, and economic conditions affecting health outcomes for women and girls across the globe. Through a human rights lens, students explore the core women's health issues outlined by the World Health Organization (WHO).

**HSCI 2130. Primary Care Skills Practicum. 2 Credits.**

**HSCI 2131. Adult Primary Care Practicum. 2 Credits.**

Clinical course on caring for adults with common primary care problems and understanding concepts of health promotion and disease prevention. Students conduct in-depth examinations of specific primary care problems; review current pathophysiology literature; explore pharmacologic and non-pharmacologic treatment modalities; and diagnose and manage acute and chronic problems prominent in ambulatory health clinics serving the general adult population. A minimum of 80 clinical hours is required.

**HSCI 2132. Primary Care Mental Health Practicum. 2 Credits.**

**HSCI 2133. Specialized Clinical Experience. 2 Credits.**

**HSCI 2190. Independent Study in Clinical Health Sciences. 1-12 Credits.**

Independent study and special projects involving student-defined learning objectives. Permission of the faculty member directing the study is required prior to enrollment.

**HSCI 2195. Special Topics in Health Sciences. 1-3 Credits.**

**HSCI 2197. Professional Seminar I. 1 Credit.**

Through lectures, observational experience and group discussions students are introduced to health professions, healthcare settings, and professional presence as future healthcare providers.

**HSCI 2503. Survey of Medical Terminology. 1 Credit.**

Basic medical terminology and vocabulary commonly used in health care. For pre-medical students and other pre-health professions. Restricted to SMHS students.

**HSCI 3100. Applied Health Equity in Washington, DC. 1 Credit.**

Introduction, through community engagement, to the historical health disparities and long-term health inequities faced by many low-income Black residents of Washington, DC. Recommended background: Prior completion of an introductory public health course.

**HSCI 3101. General Chemistry I. 4 Credits.**

First course in a two-course series in general chemistry with corresponding lab activities. Focus on fundamental laws, theories, and mathematical concepts of chemistry. Students must have program standing or permission of the instructor to enroll.

**HSCI 3102. General Chemistry II. 4 Credits.**

Second course in a two-course series in general chemistry with corresponding lab activities. Focus on fundamental laws, theories, and mathematical concepts of chemistry. Students must have program standing or permission of the instructor to enroll. Prerequisites: HSCI 3101 with a minimum grade of C-.

**HSCI 3103. Organic Chemistry I. 4 Credits.**

First in a two-course series. Introduction to the structure, reactivity, and properties of organic compounds. Includes corresponding laboratory activities. Restricted to students in the post-baccalaureate certificate in pre-medicine program. Prerequisites: HSCI 3101 and HSCI 3102 or equivalent with a minimum grade of C-.

**HSCI 3104. Organic Chemistry II. 4 Credits.**

Continuation of HSCI 3103. Metabolic pathways provide the cellular framework for energy acquisition and utilization in living systems. Emphasis on the critical role that organic compounds play in these processes. Restricted to students in the post-baccalaureate certificate in pre-medicine program. Prerequisites: HSCI 3101, HSCI 3102, and HSCI 3103 or equivalent with a minimum grade of C-.

**HSCI 3105. Biochemistry. 3 Credits.**

Concepts and principles of biochemistry applicable to health care. Methods and approaches are correlated with the biochemical basis of human disease. Prerequisite: HSCI 3103.

**HSCI 3106. Microbiology for Health Sciences. 3 Credits.**

Principles of microbiology with emphasis on microorganisms that impact health and cause human disease. Topics include an overview of microbiology and aspects of medical microbiology, identification and control of pathogens, disease transmission, host resistance, and immunity. Prerequisites: One course in biology or chemistry or anatomy and physiology; or MLS 2000 or MLS 2001.

**HSCI 3107. Introduction to Biochemical Pharmacology. 1 Credit.**

The theory of drug action; practical issues that must be addressed when translating knowledge from molecular and cellular research into drug discovery and development. Restricted to students in the post-baccalaureate pre-medicine certificate program. Recommended background: Concurrent enrollment in HSCI 3105.

**HSCI 3108. Microbiology for Health Sciences Laboratory. 1 Credit.**

Practical study of bacteria, yeasts, molds, protozoa, and viruses in relation to the health professions. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior completion of 3 credits in microbiology lecture or concurrent registration in HSCI 3106.

**HSCI 3109. Trends and Innovations in Healthcare. 3 Credits.**

New technologies, healthcare delivery models, and the phenomenon of sophisticated consumers. Assessment of the impact of science, technology, ethics, and government on the provision of healthcare.

**HSCI 3112. Psychopathology. 3 Credits.**

Abnormal psychology course focusing on the etiology, diagnosis, and treatment of mental health disorders in adults. Emphasis on understanding disorders based on universal models used worldwide. Prerequisites: PSYC 1001 or equivalent college-level course in introductory psychology.

**HSCI 3113. Health Policy and the Healthcare System. 3 Credits.**

Policy analysis methodology used to analyze the impact of changes in the healthcare system on the practice of health sciences professionals and the quality and process of healthcare.

**HSCI 3114. Management of Health Science Services. 3 Credits.**

Application of management and organizational principles to the delivery of services provided by health sciences disciplines.

**HSCI 3117. Principles of Biostatistics for Health Sciences. 3 Credits.**

Biostatistics for health science professionals. Concepts and methods, including confidence intervals, ANOVA, multiple and logistic regression, and non-parametric analyses. Scientific literature is used to provide a comprehensive context in which analytical evidence is employed to support practices in the health sciences. Prerequisites: HSCI 2117 or permission of the instructor.

**HSCI 3118. Quality Improvement in Healthcare. 3 Credits.**

The structures in place to enhance the quality of healthcare delivery, and political and economic influences that affect quality improvement programs. Assessment of interventions to enhance healthcare from the perspectives of providers and patients.

**HSCI 3197. Professional Seminar II. 1 Credit.**

Students gain an understanding of professional roles and activities across healthcare and social service settings through in-depth observation. In addition, students prepare applications for graduate programs in the health profession of their choice. Prerequisites: HSCI 2197.

**HSCI 3201. Biology I. 4 Credits.**

First course in a two-course series. Develops a foundation in cellular and molecular biology, metabolism, genetics, evolution, and population biology. Includes a corresponding laboratory component. Restricted to students in the post-baccalaureate certificate in pre-medicine program or approval of the instructor.

**HSCI 3202. Biology II. 4 Credits.**

Continuation of HSCI 3201. Develops a foundation in the principles of cellular communication and the form and function of the human body with a corresponding laboratory component. Restricted to students in the post-baccalaureate certificate in pre-medicine program or with the approval of the instructor. Prerequisites: HSCI 3201 or equivalent with a grade of C- or above.

**HSCI 3301. Physics I. 4 Credits.**

Classical physics, including mechanics, Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Didactic lectures augmented by a corresponding hands-on laboratory component.

**HSCI 3302. Physics II. 4 Credits.**

Continuation of HSCI 3301 Physics I, including electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Didactic lectures augmented by a corresponding hands-on laboratory component.

**HSCI 3401. Current Topics in Health Care I. 1 Credit.**

First in a two-course sequence designed for students who plan to become health care professionals; issues in health care delivery, roles and scope of practice in health care professions, and current topics health care.

**HSCI 3402. Current Topics in Health Care II. 1 Credit.**

Second in a two-course sequence designed for students who plan to become health care professionals. Continuing coverage of health care delivery, current topics in health care, and how issues raised apply to the needs of a diverse population. Prerequisite: HSCI 3401.

**HSCI 3501. Human Anatomy and Physiology I. 4 Credits.**

First in a two-course sequence. The structure and function of cells, tissue, organs, and systems in the human body. Restricted to SMHS students.

**HSCI 3502. Human Anatomy and Physiology II. 4 Credits.**

Second in a two-course sequence. The structure and function of cells, tissue, organs, and systems in the human body. Restricted to SMHS students. Prerequisite: HSCI 3501.

**HSCI 4101. Biopsychosocial Aspects of Human Development. 3 Credits.**

Study of the biopsychosocial components of human development across the lifespan using a developmental theoretical model.

**HSCI 4102. Human Physiology in Extreme Environments. 3 Credits.**

Human physiology and the pathophysiology of acute illnesses and injuries. Evaluation of appropriate mitigation strategies associated with living and working in extreme environments.

**HSCI 4103. Healthcare Law and Regulation. 3 Credits.**

Introduction to structures, rules and mechanisms important to healthcare professionals and organizations. Legal standards relevant to healthcare, including medical malpractice, liability, fraud and abuse, and compliance.

**HSCI 4105. Case Studies in Healthcare. 3 Credits.**

Critical analysis and evaluation of clinical and healthcare case studies. Case studies are used to explore the application of ethical principles and decision making processes to selected problems in medicine and healthcare.

**HSCI 4106. Introduction to Epidemiology for Health Sciences. 3 Credits.**

An introduction to epidemiological methods and their applications in the prevention and control of illness, community and clinical interventions, and health services.

**HSCI 4107. Health Literacy. 3 Credits.**

Overview of health literacy, its role in individuals, communities, and organizations, and its impact on delivery and quality of health care services.

**HSCI 4112. Research and Writing in Health Sciences. 3 Credits.**

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**HSCI 4112W. Research and Writing in Health Sciences. 3 Credits.**

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

**HSCI 4114. Healthcare in Developing Nations. 3 Credits.**

Introduction to health concerns in the developing world. Interventional approaches for issues such as malaria, HIV/AIDS, clean water, maternal and women's health, and childhood mortality.

**HSCI 4197. Professional Seminar III. 1 Credit.**

Guest speakers present topics relevant to human performance and well-being. Prerequisites: HSCI 3197.

**HSCI 4198. Mentored Research I. 3 Credits.**

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**HSCI 4199. Mentored Research II. 3 Credits.**

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**HSCI 5099. Variable Topics. 1-99 Credits.**

**HSCI 6212. Teaching Strategies in the Health Professions. 3 Credits.**

Application of teaching and learning principles in the design of education in health professions. Illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program development and the enhancement of teaching and assessment skills.

**HSCI 6213. Curriculum Development in the Health Professions. 3 Credits.**

Curriculum design and assessment skills in medical and health science settings. Recommended background: prior completion of HSCI 6212 or experience with principles of adult learning.

**HSCI 6223. Topics in Health Care Leadership. 3 Credits.**

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. Credit cannot be earned for this course and COHM 6235.

**HSCI 6231. Advanced Pediatric Health Needs. 3 Credits.**

Service delivery to children with disabilities from infancy through early schooling. Emphasis on learning disabilities, ADHD, sensory processing disabilities, and intellectual disabilities with co-occurring developmental and emotional disorders.

**HSCI 6233. Pathology-Hlth Sci Students I. 1 Credit.**

**HSCI 6234. Pathology-Hlth Sci Students II. 3 Credits.**

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.

**HSCI 6240. Issues and Trends in the Health Care System. 3 Credits.**

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.

**HSCI 6241. The Health Care Enterprise. 3 Credits.**

An overview of global business principles related to health care systems: the management of patient-centered care delivery, marketing, finance and fiscal management principles, information technology, and quality improvement. Credit cannot be earned for this course and COHM 6245.

**HSCI 6261. Foundations in Clinical and Translational Research. 3 Credits.**

Overview and analysis of the translational research principles and practice through the application of basic, clinical, community health and health services research concepts.

**HSCI 6262. Transdisciplinary Sem/Pract.. 3 Credits.**

Transdisciplinary analysis of key translational research concepts delivered in a practicum and workshop framework. Individualized experiential practicum to address educational and experiential gaps.

**HSCI 6263. Biostatistics Translational Research. 3 Credits.**

Basic concepts and methods of biostatistics applied to translational research. Topics include distributions, populations and sample selection, variables, interaction and confounding, hypothesis formulation, correlation, t-tests, ANOVA, regression, and ch.

**HSCI 6264. Epidemiology Translational Research. 3 Credits.**

Basic concepts and methods of epidemiology and their application in measuring, studying and improving the health of populations applied to applications for translational research.

**HSCI 6265. Grantsmanship in Translational Research. 3 Credits.**

Writing grant proposals to fund clinical research, with an emphasis on translational research proposals. Emphasis is on persuasive communication, conceptually based hypotheses and research methods and the grant application process, including communicating.

**HSCI 6270. Research Methods for the Health Professions I. 3 Credits.**

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.

**HSCI 6271. Research Methods for the Health Professions II. 3 Credits.**

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.

**HSCI 6273. Bioinformatics for Genomics. 3 Credits.**

Bioinformatics tools for different analytical situations; strengths and limitations of the most common bioinformatics strategies. Generalizing acquired knowledge and its underlying principles and techniques to other types of big data applications for the purpose of interpretation of results.

**HSCI 6275. Transdisciplinary Research Proposals. 3 Credits.**

The integration of competencies acquired throughout the program. The development and submission of a transdisciplinary research proposal that responds to a Call for Proposals from an external sponsor, such as the National Institutes of Health.

**HSCI 6285. Principles of Collaboration and Team Science. 3 Credits.**

Approaching health, technology, social, and environmental problems with cross-disciplinary engagement and collaboration. Foundational and practical principles and their impact on collaborative and team science engagements. Restricted to PhD candidates in translational health sciences; permission of the instructor may be substituted.

**HSCI 6287. Biology of HIV/AIDS. 3 Credits.**

The basic science, pathogenesis, natural history, and laboratory identification of the human immunodeficiency virus.

**HSCI 6291. Advanced Topics in Health Sciences. 1-3 Credits.**

Topics vary depending on current issues of interest and faculty availability. Open to undergraduates with permission of the instructor.

**HSCI 6297. Independent Study for Health Professionals. 1-5 Credits.**

Independent study involving analysis of a clinical topic, a patient education project, or an on-site mentored clinical research practicum.

**HSCI 8212. Teaching Strategies in the Health Professions. 3 Credits.**

Application of teaching and learning principles in the delivery of education in health professions; practices grounded in andragogy, contributing to curriculum program development and the enhancement of teaching and assessment skills. Restricted to SMHS students. Recommended background: experience in health care or practice as a health care professional. Credit cannot be earned for this course and HSCI 6212.

**HSCI 8213. Curriculum Development in the Health Professions. 3 Credits.**

Curriculum development and assessment skills in medical and health science settings. Restricted to SMHS students. Recommended background: experience in health care or practice as a health care professional. Credit cannot be earned for this course and HSCI 6213.