HEALTH SCIENCE (HAV, HAN)

Major in Health Science

School of Health Technology and Management

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Minors or second majors of particular interest to students majoring in Health Science: Biology (BIO), Business Management (BUS), Chemistry (CHE), Economics (ECO), Computer Science (CSE), Environmental Studies (ENS), Health and Wellness (LHW), Psychology (PSY), Sociology (SOC)

Health Science (HAV, HAN)

The School of Health Technology and Management (SHTM) offers a Bachelor of Science degree in Health Science (BSHS), with clinical and non-clinical concentrations. Non-clinical concentrations of study include community health education, disability studies, environmental health, health care informatics, health care management, medical billing and coding, pharmacy technician, and public health. Clinical concentrations of study include anesthesia technology, and medical dosimetry, emergency and disaster management, nuclear medicine technology, and radiologic technology.

HAV/HAN

The Health Science major requires that students receive a broad liberal arts education during their first three years (HAV). Students can declare Health Science as a major at any time. In the senior year (HAN), the curriculum focuses on health care related topics. Graduates will be knowledgeable about health care, and can expect to be employed by hospitals; integrated health care delivery systems; physician group practices; health departments; nursing homes; and managed care, corporate and not-for-profit organizations. They can also pursue clinical and graduate degrees through appropriate admissions processes.

Requirements for the Major in Health Sciences (HAN)

Requirements for Enrollment in Senior-Year Courses in the Major in Health Sciences (HAN)

While there is no formal application process, students should complete these requirements before advancing to the senior year courses in the program.

Health Science, first three years (HAV)
1. Completion of 91 credits with a minimum g.p.a. of 2.00 or higher
2. Completion of the Diversified Education Curriculum (D.E.C.)
3. Completion of a minimum of 16 credits in the natural sciences (D.E.C. category E) Note: HAN 200 and HAN 202 (or equivalent anatomy and physiology courses) are required natural sciences courses
4. Completion of 21 credits in related electives courses (see listing below)
Note: Any natural science course taken beyond the minimum requirement of 16 credits can also satisfy related elective requirement. Note: HAN 312 (or equivalent medical terminology course) is a required related elective course.
5. Completion of 10 credits at the upper-division level (courses numbered 300 or higher), including courses used to satisfy Requirements 1 through 5 above.
Note: 10 credits of computer science/information systems electives are strongly recommended as prerequisites for the Health Care Informatics concentration. CSE 101, CSE 113, and CSE 114 are strongly recommended.
For more information, please visit http://www.hsc.stonybrook.edu/shtm/index.cfm.

Requirements for the Major

Note: See the Health Sciences Center Bulletin for course descriptions not included in this Bulletin.

Senior Year Health Science (HAN)

The major in Health Science leads to the Bachelor of Science degree. Completion of the degree requires a minimum of 29 credits after achieving senior status and advancement to senior-year courses. To be in good standing in the School of Health Technology and Management, the student must maintain a minimum 2.00 cumulative g.p.a. and a 2.50 minimum g.p.a. in required professional (HAN) courses. A minimum grade of C is required in each core Health Science program course before a student is permitted to advance to the concentration courses. If a student receives a grade less than C in any of the HAN courses, the course must be repeated.

Core Courses

To be completed during the first semester, senior year. Students must enroll in 15 credits of core health science courses including:
1. HAN 300 Health Care Issues
2. HAN 333 Communication Skills
3. HAN 335 Professional Ethics
4. HAN 364 Issues in Health Care Informatics
5. HAN 383 Professional Writing

Courses in the Concentration
To be completed during the second semester, senior year. Students are advised to select an area of concentration because it will offer greater career opportunities.

A. Health Care Management
This concentration provides the knowledge and skills to manage health care practices, plan health care programs, and utilize the fundamentals of health care management and health services administration.
1. HAN 432 Introduction to Health Care Management
2. HAN 434 Corporate Compliance and Regulation
3. HAN 435 Sales and Marketing in Health Care
4. HAN 436 Continuous Quality Improvement in Health Care

B. Community Health Education
This concentration provides students with the knowledge and skills needed to plan, implement, and evaluate health education programs in the community. Students who successfully complete this concentration may be eligible to apply for the national certification examination of health educators. Employment opportunities include public and private health-related agencies, hospitals, and HMOs.
1. HAN 440 Introduction to Community Health Education
2. HAN 442 Community Health Education Models and Resources
3. HAN 444 Teaching Strategies
4. HAN 456 Behavioral and Social Aspects of Health

C. Public Health
This concentration provides students with a basic foundation, including epidemiology and biostatistics, in public health. Students who graduate with this concentration may find employment in health departments, public health agencies, health maintenance organizations and health-related corporations.
1. HAN 450 Introduction to Public Health
2. HAN 452 Epidemiology and Biostatistics
3. HAN 454 Issues in Public Health
4. HAN 456 Behavioral and Social Aspects of Health

D. Health Care Informatics
This concentration prepares the student for a career in health care information systems, and processing and managing health care data with computer and communication technologies. Emphasis is placed on health care information systems' architecture, computerized medical data processing, and clinical decision support systems.
1. HAN 462 Developing Health Information Systems
2. HAN 464 Health Information Systems Management
3. HAN 466 Applied Healthcare Informatics
4. HAN 467 Utilization and Outcomes Research Methods

E. Environmental Health
This concentration explores the concepts and principles of various environmental health issues, including lead management, pest management, hazardous waste management, and food service sanitation. Emphasis is placed on the recognition, identification, and control of environmental contaminants in the workplace; prevention and preparedness for hazardous material incidents; and compliance with various regulatory agencies.
1. HAN 470 Environmental Health and Safety Engineering
2. HAN 474 Industrial Hygiene
3. HAN 476 Hazardous Materials, Emergency Response, and Environmental Auditing
4. HAN 478 Internship in Environmental Health

F. Emergency and Critical Care
This concentration will serve the needs of those students interested in pursuing clinical graduate studies. Emphasis is placed on providing knowledge of the most frequently encountered medical emergencies, including trauma and resuscitation. In addition, due to the changing global environment, courses on hazardous materials and weapons of mass destruction will also be provided.
1. HAN 416 Special Issues in Emergency Care and Resuscitation
2. HAN 417 Cardiac and Medical Emergencies
3. HAN 471 Trauma and Trauma Systems
4. HAN 472 Weapons of Mass Destruction
5. HAN 477 HAZMAT Training

G. Disability Studies
This concentration provides an interdisciplinary focus of study in areas such as independent living, employment, adults and children with disabilities, and health and community issues. Job opportunities for entry-level professional and managerial positions may be found in developmental or physical disability services agencies, independent living centers, mental health centers, the geriatrics and vocational rehabilitation agencies.
1. HAN 443 Aging and Disability
2. HAN 446 Disability Health and Community
3. HAN 447 Children with Disabilities
4. HAN 448 Disability and Employment
5. HAN 449 Project in Disability Studies

H. Medical Dosimetry
This concentration is designed to provide students with the knowledge and skills necessary to be a Radiation Therapy Aide. Upon graduation, students may apply for admission to the 12-month, hospital-based post-baccalaureate Medical Dosimetry program, which prepares students for entry-level medical dosimetry positions. A Medical Dosimetrist is a member of the Radiation Oncology team who has the education and expertise necessary to generate radiation dose distributions and dose calculations in collaboration with the medical physicist and the radiation oncologist for cancer patients.
1. HAN 480 Introduction to Radiation Therapy and Medical Dosimetry
2. HAN 482 Introduction to Pathology
3. HAN 486 Principles and Practices of Radiation Therapy
4. HAN 488 Medical Imaging and Radiographic Anatomy
5. HAN 492 Radiation Oncology/Medical Physics II
For admission requirements to the clinical concentrations, please refer to the SHTM Web site at http://www.hsc.stonybrook.edu/shtm/bshs.

I. Nuclear Medicine Technology
This concentration within Radiologic Sciences is designed to educate students to meet a growing need in the health care industry for highly trained technologists who utilize rapidly developing technologies to image the human body. Nuclear medicine is widely used for imaging the bodies of patients with cancer and cardiac conditions. HAN 395 Radiation Physics in Medicine (4 credits) is required during the fall semester of the senior year as a prerequisite to acceptance into the concentration. Acceptance into the post-baccalaureate clinical year is required in order to enter the concentration. Students must complete the one-year post-baccalaureate clinical training in order to be eligible to take the National Registry Examination.
1. HAN 401 Radiobiology and Health Physics
2. HAN 402 Radiographic Anatomy and Pathology
3. HAN 426 Nuclear Medicine Instrumentation
4. HAN 427 Nuclear Medicine Procedures
5. HAN 429 Radiopharmacy and Therapy
For admission requirements to the clinical concentrations, please refer to the SHTM Web site at http://www.hsc.stonybrook.edu/shtm/bshs.

J. Radiologic Technology
This concentration in Radiologic Sciences is designed to educate students to meet the growing demand for imaging technologists. HAN 395 Radiation Physics in Medicine (4 credits) is required during the fall semester of the senior year as a prerequisite to acceptance into the concentration. Acceptance into the post-baccalaureate clinical year is required in order to enter the concentration. Students must complete the one-year post-baccalaureate clinical training in order to be eligible to take the National Registry Examination.
1. HAN 401 Radiobiology and Health Physics
2. HAN 402 Radiographic Anatomy and Pathology
3. HAN 404 Radiology Instrumentation
4. HAN 405 Radiographic Technique
5. HAN 406 Radiographic Procedures and Positioning I
For admission requirements to the clinical concentrations, please refer to the SHTM Web site at http://www.hsc.stonybrook.edu/shtm/bshs.

K. Anesthesia Technology
This concentration provides the knowledge and skills required for students to function as integral members of anesthesia teams in surgical settings. After completion of this concentration, students can work in entry-level non-clinical positions in an anesthesia department or continue to the post-baccalaureate Anesthesiology Technologist Program to be eligible to take the American Society of Anesthesia Technologists and Technicians (ASATT) certification examinations.
1. HAN 434 Corporate Compliance and Regulation
2. HAN 481 Intro. to Anesthesia
3. HAN 483 Cardiopulmonary Physiology for ASATT
4. HAN 485 Clinical Monitoring
5. HAN 489 Pharmacology for ASATT
For admission requirements to the clinical concentrations, please refer to the SHTM Web site at http://www.hsc.stonybrook.edu/shtm/bshs.

Related Electives
Students are encouraged to take related electives designated:
• ECO, CSE and BUS for the Health Care Management concentration
• CSE, PSY, ECO and BUS for the Health Care Informatics concentration
• HIS, HBP, ECO, MEC, BCP, SOC and BUS for the Environmental Health concentration
• LHW, ECO, ANT, SOC, HMC, PSY and BUS for the Public Health concentration
• SOC, HWC, LHW, PSY, SSI and HMC for the Community Health Education concentration

Relevant electives are subject to change. Call (631) 444-BSHS for current electives.

For more information, please visit http://www.hsc.stonybrook.edu/shtm/index.cfm.
HAN

Health Sciences

HAN 200: Human Anatomy and Physiology for Health Science I
This is the first course in a two-part sequence that introduces the study of human anatomy and physiology at the cell, tissue and organ system levels of organization, with emphasis on understanding disease processes associated with systems. This course is designed for Health Science (HAV) majors, particularly those interested in pursuing HAN clinical concentrations of study. Open to non-HSC students. Prerequisite: one BIO course. 3 credits

HAN 202: Human Anatomy and Physiology for Health Science II
This is the second course in a two-part sequence that continues the study of human anatomy and physiology. Topics include the endocrine system, blood composition, the cardiovascular system, the lymphatic system, the immune system, the respiratory system, the digestive system, nutrition, the urinary system, the reproductive system, fluid, electrolyte and acid-base balance and heredity. This course is designed for Health Science majors (HAV), particularly those interested in pursuing HAN clinical concentrations of study. Prerequisite: HAN 200. 3 credits

HAN 300: Health Care Issues
Provides students with an overview of the organization of the health care delivery system. Includes the role of health care professionals and health care organizations. Explores issues regarding health care insurance, the uninsured and underserved, managed care and changes in the health care marketplace. Provides an overview of major diseases including epidemics, chronic and acute illness. Discusses the role of health promotion and disease prevention as well as alternative and complementary medicine. Restricted to HAN majors. Prerequisite: Admission to Undergraduate Health Sciences Center program. 3 credits

HAN 312: Medical Terminology and Human Anatomy
Provides the medical terminology and human anatomy needed for non-clinical roles in healthcare. Presents medical terminology through didactic and experiential techniques by reviewing the digestive, urinary, integumentary, reproductive, respiratory, endocrine, nervous, musculoskeletal, cardiovascular and lymphatic systems. Students will learn how to build a medical vocabulary and understand the importance of precise communication in the delivery of health care. Open to non-HSC students. Prerequisite: Admission to Undergraduate Health Sciences Center program. 3 credits

HAN 333: Communication Skills
Introduces the principles of effective communication and stages of group development. Offers theory and practice of interpersonal communication and groups. Provides specific topics related to health care teams. Restricted to HAN majors. Prerequisite: Admission to Undergraduate Health Sciences Center program. 3 credits

HAN 335: Professional Ethics
Provides students with a framework for identifying ethical dilemmas in professional settings. Through the use of case studies and role-playing, students simulate ethical situations relating to confidentiality, informed consent and truth-telling, and explore various approaches for resolving these conflicts. Presents professional codes of ethics using small and large group discussions. Presents and discusses ethics-related topics such as genetics, transplants, cloning, advance directives, and health care accessibility. Restricted to HAN majors. Prerequisite: Admission to Undergraduate Health Sciences Center program. 3 credits

HAN 364: Issues in Health Care Informatics
Acquaints students with the use and application of personal computers and medical information systems used in health care. Emphasizes the optimization and customization potential of computer functions for standard and specialized tasks. Examines the present and potential use of the Internet in the health care arena. Presents the application of medical informatics to health care delivery through classroom demonstrations and discussions. Restricted to HAN majors. Prerequisite: Admission to Undergraduate Health Sciences Center program. 3 credits

HAN 383: Professional Writing
Comprehensive overview of the skill set required to write professional documents. Students will be required to communicate to a variety of audiences via letters, memos, electronically transmitted documents, researched essays, and brochures. Introduces students to software packages and other web-based resources. Restricted to HAN majors. Prerequisite: Admission to Undergraduate Health Sciences Center program. 3 credits

HAN 395: Radiation Physics in Medicine
Provides an introduction to radiological and radiation oncology physics for students interested in a career in either medical imaging or radiation therapy/oncology. Presents elements of mathematics and general physics relevant to the radiological sciences. Topics include production of radiation, radioactivity, interaction of radiations with matter, radiation detection, characteristics of high energy medical LINAC radiation, absorbed dose calculation and measurement, radiography, radionuclide imaging, imaging with ultrasound, imaging with magnetic resonance, and basic medical radiation safety. Restricted to HANBS students. Prerequisite: Admission to Undergraduate Health Sciences Center program. 4 credits

HAN 401: Radiobiology and Health Physics
Presents an overview of the biological effects of radiation by examining the interaction of radiation with matter, macromolecules, cells, tissue and the whole body. Studies the clinical impact of responses to radiation. Introduces students to radiation safety through topics such as biologic consequences of irradiation, regulatory limitation of exposure, methods for exposure minimization, and radiation monitoring. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: HAN 394. Prerequisite: Admission to HAN 400 level classes. 3 credits

HAN 402: Radiographic Anatomy and Pathology
Provides basic radiographic anatomy from both the projection and cross sectional point of view. Introduces to basic disease processes, including the nature and causes of disease and injury. Examines these processes on medical images acquired through radiography, computed tomography, angiography, magnetic resonance, scintigraphy, emission computed tomography and ultrasonography. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: HAN 394.
HAN 404: Radiology Instrumentation
Expands imaging physics into the area of Radiologic Technology. Studies the physical basis, construction, operation, and quality control of radiographic, fluoroscopic, computed radiographic, direct radiographic, digital subtraction, and computed tomography systems. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: HAN 394
Prerequisite: Admission to HAN 400 level classes
3 credits

HAN 405: Radiographic Technique
Focuses on production of radiographic image. Includes rationale for selection of technical factors, issues of image resolution and contrast, image receptor technology; film sensitometry; image intensification; film processing; grids; automatic exposure control; portable/surgical procedures; and basic contrast agent pharmacology, and administration directly related to the production of radiographic images. Presents an overview of the special modalities of computed radiography (CR), direct radiography (DR), fluoroscopy, digital fluoroscopy, digital subtraction angiography (DSA), computed tomography (CT), and picture archive communication systems (PACS). Special emphasis is placed on reducing patient exposure to radiation. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: HAN 394
Prerequisite: Admission to HAN 400 level classes
3 credits

HAN 406: Radiologic Procedures and Positioning I
Examines routine clinical radiographic positioning of the upper and lower extremities, shoulder, spine, chest, pelvis skull, abdomen, and digestive and urinary systems. Includes portable studies, operating room applications, angiography and advanced imaging techniques. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: HAN 394
Prerequisite: Admission to HAN 400 level classes
6 credits

HAN 416: Special Issues in Emergency Care and Resuscitation
Explores issues in special patient populations and areas in emergency care. Covers pediatric emergencies, obstetric emergencies, neonatology, and geriatric emergencies. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: Admission to HAN 400 level classes
6 credits

HAN 417: Cardiac and Medical Emergencies
Explores concepts and issues that are critical to the assessment and care of patients presenting with cardiac and other medical emergencies. Covers pathophysiology, medical patient assessment and management, cardiopulmonary resuscitation, and advanced cardiac life support. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: Admission to HAN 400 level classes
3 credits

HAN 426: Instrumentation for Nuclear Medicine Technology
Expands on HAN 394 (Imaging Physics), specifically in the area of Nuclear Medicine Technology. Examines the physical basis, construction, operation and quality control of radiation detection, pulse height analysis, planar imaging, Single Photon Emission Tomography (SPECT) imaging and Positron Emission Tomography (PET) imaging devices. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: HAN 394
Prerequisite: Admission to HAN 400 level classes
3 credits

HAN 429: Radiopharmacy and Therapy in Nuclear Medicine
Examines the production, labeling, quality control, clinical biodistribution, and application of radionuclide tracers for nuclear medicine imaging. Covers radionuclide and radiopharmaceutical characteristics that provide suitable imaging properties. Discusses various aspects of laboratory procedures (e.g. safe handling of radionuclides, radiation safety surveys, hot laboratory instruments, radiopharmaceutical preparation, quality control and sterile technique). Explores pathologies, radiopharmaceuticals, dosage calculation and administration, and patient management issues related to radionuclide therapy. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: HAN 394
Prerequisite: Admission to HAN 400 level classes
3 credits

HAN 432: Introduction to Health Care Management
Introduces students to the practices and theories of health care policy and management. Presents an overview of the trends in public policy and management techniques. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: Admission to HAN 400 level classes
4 credits

HAN 434: Corporate Compliance and Regulation
Provides an overview of recently enacted legislation requiring health care institutions' compliance programs. Introduces regulations and compliance including anti-trust, controlled substances, Americans with Disabilities Act, Occupational Safety and Health Act, Joint Commission on Accreditation of Health Care Organizations, Department of Health jurisdiction over hospitals and licensure requirements. Restricted to students approved for appropriate senior year track in the Health Science major. Prerequisite: Admission to HAN 400 level classes
4 credits

HAN 435: Sales and Marketing in Health Care
Introduces the essential aspects of marketing and sales in the changing health care world.
Addresses the concept of marketing, the nature of marketing strategy and the environment in which marketing operates. Provides a framework for understanding the consumer, along with key selling methods. Topics include the “Four Ps” of marketing, promotional elements of marketing, the communication process, and personal selling. Restricted to students approved for appropriate senior year track in the Health Science major.

Prerequisite: Admission to HAN 400 level classes
3 credits

**HAN 436: Continuous Quality Improvement in Health Care**

Provides basic principles associated with Total Quality Management (TQM) and Continuous Quality Improvement (CQI). Aids identification and quality problem-solving found in all health care organizations utilizing CQI tools and techniques. Through the use of case studies, current events, and textbook materials, students will learn how to identify problems, recommend improvements, and collect data to demonstrate process improvement. Restricted to students approved for appropriate senior year track in the Health Science major.

Prerequisite: Admission to HAN 400 level classes
3 credits

**HAN 440: Introduction to Community Health Education**

Introduces students to the foundation of planning, implementing and evaluating community-based health education programs. Presents classic theories of health education including the social learning theory, health belief model, and the attribution theory. Reviews relevant health education programs. Examines various learning styles and skills. Basic health education models are introduced and critiqued through individual and group projects. Reviews health education professional organizations and associations. Each student is required to design a health education program for a selected population. Restricted to students approved for appropriate senior year track in the Health Science major.

Prerequisite: Admission to HAN 400 level classes
3 credits

**HAN 447: Children with Disabilities**

Presents a comprehensive overview of the theories of child development and issues related to children with developmental disorders, neurodevelopmental disorders, and communication and learning disorders. Includes behavioral, developmental, language, medical, motor and sensory needs of children with developmental disabilities. Restricted to students approved for appropriate senior year track in the Health Science major.

Prerequisite: Admission to HAN 400 level classes
3 credits

**HAN 448: Disability and Employment**

Presents a comprehensive overview of the Disability and Employment field. Explores pertinent employment-related legislation, the vocational rehabilitation system, the structure of existing governmental and not-for-profit programs, and current disability employment practices, through the use of didactic and experiential techniques. Emphasizes the key roles of placement professionals. Provides individualized learning opportunities for individuals with disabilities who happen to be job seeking. Restricted to students approved for appropriate senior year track in the Health Science major.

Prerequisite: Admission to HAN 400 level classes
3 credits

**HAN 449: Project in Disability Studies**

Students will develop independent projects in topic area of disability studies. They will be required to develop a set of readings, engage in a minimum of 15 hours of experiential learning [in the form of community site-visits, volunteerism, or internships]. Course instructors and assigned mentors will assist students during bi-weekly group meetings and by scheduled appointments. Restricted to students approved for appropriate senior year track in the Health Science major.

Prerequisite: Admission to HAN 400 level classes
4 credits

**HAN 450: Introduction to Public Health**

Introduces the principles and practices of public health, including definitions and concepts, history and development, determinants of health, and ethical and legal aspects of public health. Orient students to various public health settings such as local and state health departments, not-for-profit community organizations, and agencies for special populations. Provides students with basic knowledge and skills for conducting community needs assessment with diverse populations. Addresses infectious disease control, environmental health, chronic disease control, tobacco and drug control, maternal and child health, women's health, and injury control topics. Restricted to students approved for appropriate senior year track in the Health Science major.

Prerequisite: Admission to HAN 400 level classes
3 credits

**HAN 452: Epidemiology and Biostatistics**

Provides students with the basic knowledge and skills for studying diseases of individuals and groups. Introduces biostatistical approaches and skills for collecting and organizing data of communities to meet health needs. Addresses epidemiological concepts, limitations and resources. Through the use of case studies, students study various epidemiological models used regionally, nationally and internationally. Includes discussions about ethical situations related to research and statistical studies. Restricted to
students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 453: Research Methods in Public Health**

Focuses on the details of public health research design. Guides students through a step-by-step approach through qualitative, comparative, and quantitative research designs and analysis methods. Students will learn the language of research, various methods for conducting research and how to identify and synthesize research literature. Builds on concepts covered in the other courses in the public health/community health concentration. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 456: Behavioral and Social Aspects of Health**

Introduces social and behavioral factors as determinants of health. Explores theories of human and group behavior and health behavior change models through lecture and case study. Explores the dynamics between health behaviors and culture, gender, age and socioeconomic status. Students study various inventory tools for measuring health-related knowledge and methods for measuring behavior change. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 462: Developing Health Information Systems**

Introduces students to fundamental hardware and software concepts, operating systems, GUI or desktop environments and system development life cycles. Reviews Windows applications such as spreadsheet, database, forms, queries and reports. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 464: Health Information Systems Management**

The course includes organizational change issues in health care environments, resource management (inventory, tracking and acquisition) and the role of policy formulation. Consumer issues, standards and security and the provision of health information resources to healthcare workers will also be covered. Relevant applications and issues related to health services will also be explored. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 466: Applied Health Care Informatics**

Provides overview of the role of information systems in health care organizations. Emphasizes the integration of evidence-based research into clinical decision-making and the influence of information systems on health outcomes. Explores technical, organizational and cost-benefit issues related to health care information systems, including clinical decision-support, integrated networking and distributed computing technologies, telemedicine applications and artificial intelligence solutions. Through a combination of classroom-based seminars, group case studies, and computer laboratory exercises, students will develop and exercise analytical skills for appraising health information systems, as well as acquire practical experience using biomedical research databases, desktop application software, and electronic communication systems. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 467: Utilization and Outcomes Research Methods**

Provides the necessary tools to evaluate and implement research methods and utilize outcomes within the health care system. Presents an overview of statistics and research methods and evaluation techniques by utilizing group discussions and case studies. Demonstrates the utilization of technology as a resource for existing research as well as management tools. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 470: Environmental Health, Occupational Health, and Safety Engineering**

Provides fundamentals of occupational safety and health including safety engineering regulations, codes and practices, safety program administration, recognition of hazards, and implementation of hazard controls. Focuses on fire safety problems associated with modern industry and the controls needed to prevent or mitigate hazards. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 471: Trauma and Trauma Systems**

Explores concepts and issues that are critical to the assessment and care of trauma patients. Covers kinematics, pathophysiology, trauma patient assessment and management, and trauma system development. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 472: Weapons of Mass Destruction**

Presents a comprehensive overview of nuclear, biological incendiary, chemical and explosive agents that are more likely to be used as Weapons of Mass Destruction (WMD). Expands the Emergency Medical Service (EMS) provider's training in responding to conventional HAZMAT incidents and focuses on the recognition and management of incidents involving bioterrorism, chemical and nuclear weapons. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 474: Industrial Hygiene**

Introduces basic concepts of industrial hygiene. Presents the methodology and procedures that professionals in the field use to identify, measure, and correct hazards in the work environment. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 476: Hazardous Materials, Emergency Response and Environmental Auditing**
Concentrates on the nature of hazardous materials and how they are handled in the workplace. Presents the fundamentals of emergency response planning and how to perform environmental audits. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 477: HAZMAT Training for Emergency Medical Services**

Comprehensive overview of the practice and procedures required of Emergency Medical Service (EMS) providers when responding to major HAZMAT incidents. Includes management strategies for Hazards Materials (HAZMAT) disasters. Emphasizes the coordination of services and resources by national, federal and local agencies. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 478: Internship in Environmental Health**

Proposals for special projects involving advanced readings, reports and discussions on selected environmental health topics must be submitted. A research paper on the selected topic will be submitted to an assigned faculty sponsor. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

2 credits

**HAN 481: Introduction to Anesthesia**

Introduces the basics of the anesthesia specialty. Defines the role of the anesthesia specialist as an integral part of the patient care team. Through the use of lecture, video, tour, and hand-on demonstration, students will gain a working knowledge of how to assist anesthesiologists and anesthetists in the acquisition, preparation and application of equipment and supplies required for the administration of anesthesia. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

2 credits

**HAN 482: Introduction to Pathology**

Pathology is the branch of medicine devoted to the study and understanding of disease. This course will introduce the student to the concept of disease. The types of growth, causative factors and biological behavior of neoplastic diseases are discussed. Staging procedures are introduced. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 483: Cardiopulmonary Physiology for ASATT**

Familiarizes students with the anatomical structures and physiological mechanisms and functions of the cardiopulmonary system. Reviews mathematical formulas and calculations used in clinical applications of physiologic concepts. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

3 credits

**HAN 485: Clinical Monitoring**

Provides students with a working knowledge of clinical monitoring devices and their application to clinical settings. Covers duties of anesthesia technologist including the provision of technical support to professional staff in order to facilitate anesthesia departmental function. Student develops skills to maintain and organize the anesthesia environment, equipment and supplies. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

1 credit

**HAN 486: Principles and Practice of Radiation Therapy**

Introduces student to the practice and technical aspects of radiation therapy. An overview of cancer to include: statistics, epidemiology, etiology, patient education and assessment, and pharmacology and drug administration. Radiation therapy techniques specific to anatomical site will be demonstrated and treatment outcome statistics discussed. Explores treatment options available to cancer patients. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

1-2 credits

**HAN 489: Pharmacology for ASATT**

Presents basic principles of pharmacologic properties and clinical applications. Through the use of lectures and scenarios, provides working knowledge base of drug classifications and their modes of action to produce therapeutic effects on target sites. Restricted to students approved for appropriate senior year track in the Health Science major.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 492: Radiation Oncology/Medical Physics II**

Provides students interested in a career in medical dosimetry with an introduction to medical physics for radiation oncology. This is the second course in a two-part series that provides the basis for further study of the applications of radiation oncology physics to radiation treatment planning and radiation dose calculations. Covers topics such as radiation dose distribution, patient dose calculations, treatment planning, electron beam therapy, brachytherapy, modern treatment delivery, and radiation protection. Restricted to students approved for appropriate senior year track in the Health Science program.

**Prerequisite:** Admission to HAN 400 level classes

4 credits

**HAN 499: Health Science Teaching Practicum**

Advanced students assist faculty members teaching Health Science courses. In addition to working as tutors during instructional periods, students have regular conferences with a faculty supervisor. Students may not serve as teaching assistants in the same course twice. Permission of the instructor is required.

**Prerequisite:** Admission to Undergraduate Health Sciences Center program

1-2 credits

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