

# HEALTH SCIENCE

College of Health, Human Services, and Nursing  
School of Public Health and Health Sciences

## Our Mission

The School of Public Health and Health Sciences programs are designed to:

Strengthen students' intellectual capacities and abilities to develop and mobilize human and institutional resources and services to meet the health needs of diverse individuals and populations, as well as the communities in which they reside.

Educate students in developing and implementing evidence-based assessment and intervention models that improve the biopsychosocial health of diverse individuals and populations, as well as the communities in which they reside.

Prepare scholar-practitioners to engage in multidisciplinary scientific inquiry that advances the knowledge base of research and practice in the health disciplines.

Prepare graduates who will be leaders in their fields and professions to inform and influence professional dialogues on key health issues affecting diverse individuals and populations, as well as the communities in which they reside.

Prepare scholar-activists who – with global consciousness and ecosystemic perspectives – are committed to attaining health equity and collective well-being through the promotion of human development, universal human rights, and social justice.

## Program Description

Health Science offers a variety of programs including a major with different options leading to the Bachelor of Science in Health Science.

The **Community Health Option** is designed to provide students with the necessary skills and perspectives to function as effective community health workers and educators in an urban population that is diverse ethnically, economically, and demographically. Students will gain knowledge and understanding of health behavior and strategies for change, health disparities among diverse populations, and the development of programs that increase access to healthcare and related services.

A student in this option will acquire oral and written communication skills needed to develop health education materials and gain a basic understanding of public health problems and methods commonly used in studying and addressing these problems. Registered nurses and allied health care workers will be able to serve their patients more effectively by becoming knowledgeable about community health service agencies and public health policy at all levels of government. Upon completion of the Community Health Option, students will qualify to take the national Certified Health Education Specialist (CHES) examination.

The **Healthcare Management Option** is designed to provide students with a general foundation in the principles and theories of management, the skills needed by frontline or middle-level supervisors in a health care unit, an understanding of the organizational structure of the health care

system, the financing of health care services in the United States, and knowledge of current health policies at local, state and federal levels.

The **Radiologic Technology Option** is designed to accommodate the transfer student already certified in the profession. This is **not** an entry point into the profession. A radiographer who holds a current certification from the ARRT or is a licensed CRT in California is eligible to enter this option to earn a BS degree in Health Sciences.

## Features

The Healthcare Management and Community Health options are designed for practicing health professionals and future community health and healthcare personnel. Students may also apply to Radiologic Technology. Since many students work during the day, many health science courses are offered in the late afternoon, evening, and on weekends, and many meet only once a week. To keep the health science programs contemporary, most of the health science courses are taught by practicing professionals.

The transfer program is designed for Certified/Registered Radiologic Technologists who wish to earn a BS degree. This program is not competitive but students must meet admission criteria.

## Academic Advisement

All students are urged to consult with advisors throughout their matriculation at CSU Dominguez Hills. At the very least, advisors should be consulted for the following:

- Admission
- Career plans and choices
- Selection of options
- Variation in programs and/or "course substitution"
- Pre-registration advisement
- Filing for graduation

Advisement is available through the College of Health, Human Services, and Nursing Student Services Center at 1-310-243-2120 or 1-800-344-5484.

## Preparation

Students interested in healthcare management or community health may complete their lower division general education, preferably with an associate of science degree, before coming to CSU Dominguez Hills.

## Credit for Prior Health Education

If students have completed a clinical program for which they did not receive academic credit, they may be granted credit for that education. Please consult the health science office for details. The credits obtained for a clinical program may be applied as lower-division elective credits toward the Bachelor of Science degree in Health Science only.

## Procedures and Admission Criteria

Only a limited number of students can be accommodated in the clinical options. In addition to filing a completed application to the university, students must also complete the desired option application form to be considered for admission. Admission to these clinical options is not

automatically ensured by meeting academic requirements, nor does admission to CSU Dominguez Hills as a Health Science Major guarantee acceptance into individual clinical options.

## Graduation with Honors in the Major

An undergraduate student may be a candidate for graduation with honors in Health Science provided s/he meet the following criteria:

1. A minimum of 36 units in residence at CSU Dominguez Hills;
2. A minimum grade point average of at least 3.5 in courses used to satisfy the upper division requirements in the major;
3. Recommendation by the Health Science faculty.

Students who achieve honors in Health Science will have the information recorded on their transcripts and diplomas.

## Radiologic Technology Option

The Radiologic Technology option is for a post-certification option for Certified Radiologic Technologists (CRTs) who wish to continue their education and earn a bachelor's degree in Health Science.

**Post-Certification Option:** To be eligible for the post-certification option, an applicant must meet the following minimum requirements:

1. Either be a Certified Radiologic Technologist (CRT) or registered by the American Registry of Radiologic Technologists (R.T.).
2. Completion of all lower division required courses. A grade of "C" or better in each course is required. The completion of 56-70 units of lower-division coursework is highly recommended before application to the program.
3. Applicants must submit an application, with supporting documents, to CSU Dominguez Hills.
4. Admission to this option is **not** competitive as long as the above requirements have been met.

*Please note that BS Health Science– Radiologic Technology Option is not currently accepting new students. The post-certification option is currently being structured and will be offered in the near future.*

## Orthotics and Prosthetics Option

Submit the application directly to the National Commission for Orthotics and Prosthetics Common Application System:

1. M.S. in Health Science, Orthotics and Prosthetics Program  
Application is available at <http://portal.opcas.org> (<http://portal.opcas.org/>). (Common Application System) Applications to the program are accepted one time each year. Students planning to seek admission should submit both applications including all supporting materials no later than December 31 preceding a summer semester admission to the program. The application deadline may be extended to accommodate enrollment;
2. Record of experience in an Orthotic and Prosthetic facility (recommended at least 40 hours)
3. a copy of official transcripts;
4. GRE Test scores (optional);;
5. a statement of interest;
6. three letters of recommendation must be submitted directly to the Common Application System.

7. A subsequent interview by a panel consisting of orthotics and prosthetics faculty.
8. Upon admittance, to the program applicants must submit a complete graduate admission application to the University at [calstate.edu/](http://calstate.edu/) (<http://calstate.edu/apply/>) apply (<http://calstate.edu/apply/>).  
Please note: Application deadlines are subject to change without notice. Check with the O&P Program for the deadlines of the current application cycle.

## Undergraduate Programs

### Bachelor

- Health Science, Bachelor of Science (<https://catalog.csudh.edu/academics/health-science/health-science-bs/>)

### Minor

- Health Science, Minor (<https://catalog.csudh.edu/academics/health-science/health-science-minor/>)

## Graduate Programs

### Master

- Health Science, Master of Science (<https://catalog.csudh.edu/academics/health-science/health-science-ms/>)

## Faculty

Matt G Mutchler, Department Chair

Health Science Faculty: Karla Castillo, Kristen Emory, Matt G Mutchler, Archana Sharma, Elwin Tilson, Abel Whittemore, Tony Jehi, Parichart Sabado

Program Office: SBS C-321, (310) 243-2698

Mark Muller, Program Coordinator, Orthotics, and Prosthetics Program  
O&P Faculty: Ava Herbrick, Mark Cromer, Jen Lucarevic

O&P Program location: 10641 Calle Lee, Suite 185, Los Alamitos, CA 90720

Student Success Center Main Office - Advising: Welch Hall A210, (310) 243-2120, Email: [chhsnadvising@csudh.edu](mailto:chhsnadvising@csudh.edu); Mark Kerr - Advisor [mkerr@csudh.edu](mailto:mkerr@csudh.edu), (310) 243-3423

## Emeriti Faculty

Amer El-Ahraf, Ellen Hope-Kearns, Chi-Hua Hsiung, Pamela C. Krochalk

## Courses

### HEA 100. Health & Lifestyles. (3 Units)

To familiarize the student with relationships among the physical, social and psychological aspects of health, which include: self-care, prevention and analysis of personal health problems through participation in self-assessment techniques. Topics include the relationship of lifestyles to nutrition, stress, physical fitness, death and dying, and mental illness. Offered Fall, Spring, All terms

### HEA 104. Food, Health and Environment. (3 Units)

Explores the links among food, the environment and health. Contributions of social trends and government policies to the current state of health, disease and environmental impact of food systems will be examined. Offered Fall, Spring

**HEA 195. Special Topics Health Science. (1-3 Units)**

Study of special interest for students in the selected area of study. Topic and content will vary as announced.

Offered Infrequent

**HEA 201. Healthcare Systems and Perspectives. (3 Units)**

Examination of healthcare delivery systems and personal health as integrated physiological, social, psychological processes. Topics include role of healthcare providers; major healthcare organizations; contemporary healthcare issues; interactions of healthcare and physical environmental changes which influence health of the whole person.

Offered Fall, Spring

**HEA 280. Orientation and Elementary Radiation Protection. (1 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Orientation to applied medicine, hospitals and radiology departments. Introduces students to overall view of radiology and ethical principles. Basic radiation protection instruction to allow students to begin the clinical practicum.

Offered Fall

**HEA 281. Medical Terminology: Radiology. (1 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Programmed approach to general medical terminology with emphasis on radiology and applied specialties. Review of common medical terms, prefixes, suffixes and roots.

Offered Fall

**HEA 287. Clinical Practicum I. (1 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Supervised Clinical rotations through support areas of radiology department: filerooms, darkrooms, patient transport and scheduling. Introduction to hospital environment and health care team. Film critiques. Practicum 280 hours.

Offered Fall

**HEA 300. Health in Public Education. (3 Units)**

Prerequisite: HEA 100 or equivalent is recommended. Health education required course for the professional multiple or single-subject, clear credential teaching applicants. Covers all topics designated in the Health Framework for California, including personal health, family health, nutrition, the physiological and sociological effects of substance abuse, cardiopulmonary resuscitation and child abuse.

Offered Fall, Spring

**HEA 309. Mapping Public Health. (3 Units)**

Introduction to Geographic Information Systems using ArcGIS Online for Healthcare Professionals. The course allows students to interpret geographic patterns/address public health problems for policy planning. Basic concepts include population demographics, health services, analyzing environmental factors, data interpretation, and data analysis.

Offered Fall, Spring

**HEA 312. Intro To Public Health. (3 Units)**

Prerequisite: HEA 201 or concurrent enrollment is required. Nature, transmission, and control of disease from a public health perspective: Historical background, current problems, trends in prevention and control, and applications to health care planning. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Fall, Spring

**HEA 313. Introduction to Biostatistics. (3 Units)**

Prerequisite: HEA 201 (or concurrent enrollment) and MAT 131/132 are required. Introduction to the basic concepts of biostatistics and their application and interpretation. Topics include descriptive statistics, graphics, diagnostic tests, probability distributions, inference, tests of significance, association, linear and logistic regression, and life tables.

Offered Fall

**HEA 314. Health Behavior. (3 Units)**

Prerequisite: HEA 201 (or concurrent enrollment) is required. Current concepts of the behavioral sciences in the health field with specific application to ethnically and culturally diverse urban communities. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Fall, Spring

**HEA 315. Interpersonal Skills in Health Communication. (3 Units)**

Prerequisite: HEA 201 (or concurrent enrollment) is required. Fundamentals, principles, and skills of interpersonal and group processes in health related occupations. Special emphasis on theory and techniques of interviewing, small group dynamics, crisis intervention and interpersonal management skills in ethnically and culturally diverse urban settings. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Fall, Spring

**HEA 316. Introduction to Epidemiology. (3 Units)**

Principles of epidemiology are introduced in the context of interpreting studies of health in human populations within their socio-cultural setting and diverse environments. Concepts addressing the design, implementation, analysis and interpretation of epidemiological studies are covered.

Offered All terms, Spring

**HEA 318. Health Services Management. (3 Units)**

Prerequisite: HEA 201 is required. Concepts, issues, and skills in administration and management of a health care unit, including personnel, finances, equipment, supplies, and facilities. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Fall, Spring

**HEA 319. Leadership in Healthcare. (3 Units)**

Prerequisite: HEA 201 is required. Focuses on leadership theory and its application to the healthcare setting. Leadership concepts include traits, situations, communication, power, vision, integrity, emotional intelligence, and courage. Provides an understanding of theory and research, as well as skills and self insight to become effective leaders.

Offered Spring

**HEA 320. Contemporary Health and Disease. (3 Units)**

Prerequisites: HEA 201 and BIO 102 are required. Through the natural and social sciences, addresses infectious and non-infectious diseases across the lifespan, their causative factors, disease occurrence patterns, risk factors, symptoms, prevention, control, and treatment methods as well as educational implications for achieving optimal community health.

Offered Spring

**HEA 371. Radiologic Technology Legal Perspectives Review. (1 Units)**

Prerequisite: Admission to Radiologic Technology Option - CRT. Explores the foundations of the radiologic technology profession from legal perspective and coordinates study of current issues, theories and techniques related to health care delivery; principles of dark room technology and radiation protection, and medical terminology.

Offered Fall, Spring

**HEA 372. Radiologic Technology History, Philosophy, Review. (1 Units)**

Prerequisite: Admission to Radiologic Technology Option - CRT. Explores the foundations of the radiologic technology profession from historical and philosophical perspectives and coordinates study of current issues, theories and techniques related to concepts and practice of fundamental patient care, radiologic exposure and routine radiologic procedures. Offered Fall, Spring

**HEA 373. Radiologic Technology Ethical Perspectives and Professional Review. (1 Units)**

Prerequisite: Admission to Radiologic Technology Option - CRT. Explores the foundations of the radiologic technology profession from an ethical perspective and coordinates study of current issues, theories and techniques related to radiographic procedures using contrast media, topographic anatomy and positioning, and routine fluoroscopic procedures. Offered Fall, Spring

**HEA 374. Radiologic Technology Political and Social Perspectives and Professional Review. (1 Units)**

Prerequisite: Admission to Radiologic Technology Option - CRT. Explores the foundations of the radiologic technology profession from a political and social perspective and coordinates study of current issues, theories and techniques related to radiation protection and federal and state regulations, radiologic physics, topographic anatomy and positioning, and routine exams in pediatrics, surgery and genitourinary room. Offered Fall, Spring

**HEA 375. Radiologic Technology Future Perspectives and Professional Review. (1 Units)**

Prerequisite: Admission to Radiologic Technology Option - CRT. Explores the future of the radiologic technology profession from a technological, as well as professional perspective and coordinates study of current issues, theories and techniques related to special radiologic procedures, sub-specialties, and departmental and administrative procedures, and senior research topics. Offered Fall, Spring

**HEA 380. Darkroom Chemistry and Techniques. (1 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Darkroom construction, hand and automatic processing, film artifacts, processing aspects, and prevention. Quality control and darkroom chemistry. Offered Fall

**HEA 381. Patient Care Procedures Related to Radiology. (2 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Introduction to fundamental patient care procedures and principles in radiology departments: patient care/handling, body mechanics, aseptic technique, emergency procedures and use/care support equipment in preparation for patient contact. Offered Fall

**HEA 382. Principles of Radiographic Exposure. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Basic radiographic principles: image formation, intensifying screens, factors affecting quality, calibration, equipment design/function, filters, electromagnetic radiation and exposure factors. Teaches mechanics of performing examinations. Offered Fall

**HEA 383. Common Radiographic Procedures Using Contrast Media. (2 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Positioning and exposure techniques for contrast studies (esophograms, barium enemas, etc.) fluoroscopic techniques. Introduction to the uses, contraindications, and pharmacology of contrast media. Offered Spring

**HEA 384. Topogr Anatomy & Position I. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Introduces topographic anatomy and positioning procedures necessary to produce diagnostic radiographs of the entire body (except the skull). Exposure control techniques and exam indications. Offered Spring

**HEA 385. Radiation Protection. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Principles of radiation safety, biological effects, x-ray production, and radiation detection devices. Emphasis on federal and state regulations. Offered Fall

**HEA 387. Clinical Practicum II. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Supervised rotations through routine diagnostic rooms. Perform radiologic examinations on patients under direct supervision of a technologist. These will include x-rays and film critiques of the thoracic and appendicular skeleton. Rotation through emergency rooms, orthopedics, and portable radiography. Practicum 580 hours. Offered Fall

**HEA 388. Clinical Practicum III. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Supervised rotation through routine radiographic/fluoroscopic rooms, including surgery. Perform routine diagnostic examinations (except skull), fluoroscopic and intra-operative exams. Weekend rotations begin. Film critiques. Practicum 580 hours. Offered Spring

**HEA 395. Special Topics in Health Science. (1-3 Units)**

Prerequisite: Consent of instructor. Study of a topic of interest to students pursuing a career in the health professions. Topic will vary as announced. One to three hours of lecture per week. Offered Fall, Spring

**HEA 410L. Coding Procedures I Lab. (0 Units)**

Offered Infrequent

**HEA 411L. Coding Procedures II Lab. (0 Units)**

Offered Infrequent

**HEA 412L. Alternative Hlth Record Sys. (0 Units)**

Offered Infrequent

**HEA 413L. Computerized Hlth Info Systems. (0 Units)**

Offered Infrequent

**HEA 414L. Hlth Info Dept Mgmt. (0 Units)**

Offered Infrequent

**HEA 435. Orthotics Soft Goods Fitters Course. (1 Units)**

Prerequisites: BIO 250 and BIO 251 are required. Comprehensive study of short-term, custom-fitted orthoses for the management of the spine, upper and lower limbs. It includes evaluation, assessment, treatment plan formulation, implementation of the plan and follow-up. Fittings of selected orthoses are included. Offered As needed



**HEA 445. Material Science and Laboratory Skills. (2 Units)**

Prerequisites: BIO 250 and BIO 251 are required. Study of various chemical and physical properties of materials and the relationship and implications of those properties in orthotic-prosthetic design and fabrication. Development of specific laboratory competencies on O & P tools, techniques, and materials.

Offered As needed

**HEA 455. Applied Anatomy. (1 Units)**

Prerequisites: BIO 250 and BIO 251 are required. A focused course in human anatomy that uses a combined regional and systemic approach to examine the relationships and organization of the major structures within the body as they relate to Orthotic and Prosthetic application and design.

Offered As needed

**HEA 460. Comm Health Agencies. (3 Units)**

Prerequisite: HEA 201 is required. Examination and evaluation of state, federal, local and community health agencies and programs. Survey and analyze community level drug, alcohol, communicable disease, and mental health problems and programs. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Fall

**HEA 461. Community Health Needs Assessment and Program Planning. (3 Units)**

Prerequisites: HEA 314, HEA 316, HEA 462, and HEA 479 are required. Examination of approaches for conducting community health needs assessments and planning of health intervention programs.

Offered Spring

**HEA 462. Methods in Community Health Education. (3 Units)**

Prerequisite: HEA 201 is required. Introduces principles and theories of learner-centered education to promote community health. Includes assessment of learning environment; development of curriculum and teaching plans; teaching/learning strategies, methodologies, resources; selection of aids and materials; evaluation of effectiveness. Students will plan and present lessons.

Offered Spring

**HEA 463. Health Program Implementation and Evaluation. (3 Units)**

Prerequisite: HEA 461 is required. Focuses on strategic approaches to implementation of community health promotion and disease prevention programs and evaluation of program processes and outcomes.

Offered Spring

**HEA 464. Health Educator as Community Resource and Advocate. (3 Units)**

Prerequisite: HEA 201 is required. Emphasizes role of community organizing in engaging diverse communities to advance conditions in which people can be healthy. Examines role of health educators, grassroot activists, and others in stimulating social, political, and economic approaches to promote community health.

Offered Spring

**HEA 465. Introduction to Global Health. (3 Units)**

Prerequisite: HEA 201 is required. Introduces approaches used by various countries in solving their health and medical care problems, and the role of major international health organizations. Analyzes some of the current important issues in international health.

Offered Spring

**HEA 466. Environmental Health Problems. (3 Units)**

Prerequisite: HEA 201 is required. Impact of human activities on environmental quality and resulting environmental health problems, especially local issues, public and private responses to them. Design, carry out, and analyze a study and prepare a written report of results. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Fall

**HEA 467. Health Policy Issues and Analysis. (3 Units)**

Prerequisite: HEA 201 is required. Examination of the major current health policy issues in the U.S. with emphasis on the application of conceptual and procedural policy analysis tools useful for defining policy problems, assessing alternative solutions, and examining effects of health policies.

Offered Fall

**HEA 468. Multicultural Health. (3 Units)**

Prerequisite: SOC 101 and ANT 101 are recommended. Study of social, cultural, psychological, and biological factors affecting the distribution of health, wellness, and illness in various ethnic, cultural, and racial groups. Special attention is given to health issues of groups with special physical and mental health needs, including underserved and immigrant populations residing in California.

Offered Fall, Spring

**HEA 469. Management Sciences in Healthcare Organizations. (3 Units)**

Prerequisites: ECO 210, HEA 313 and HEA 318 are required. Drawing on economics, statistics, operations research, decision analysis, systems analysis, and operations management, provides an introduction to selected quantitative techniques and analytical tools applicable to improvement of management problem solving and processes, and the organizational delivery of health services.

Offered Fall, Spring

**HEA 470. Legal Issues in the Health Sciences. (3 Units)**

Examination of new legislation, exploration of various health law issues that impact hospitals, individuals and groups within the health care sector; including informed consent, regulation/antitrust, licensure and credentialing, and medical ethics. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Spring

**HEA 471. Law, Ethics and Social Values in Healthcare. (3 Units)**

Prerequisite: HEA 201 is required. Overview of legal and ethical issues faced by society, healthcare consumers, providers, and administrators within the context of social values. Introduction to legal and ethical decision-making at the governmental, institutional, and practitioner levels.

Offered Fall, Spring

**HEA 472. Survey of Healthcare Finance. (3 Units)**

Prerequisites: HEA 201, ACC 230 and ECO 210 are required. Concepts and issues in financial management of healthcare organizations. Use of tools for cost effective decision-making and learn to recognize and deal with financial components of decision-making in healthcare organizations. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments.

Offered Fall

**HEA 474. Health Care Ethics. (3 Units)**

Prerequisites: HSC 201; HEA 470 and HEA 472 are recommended. Intensive study of ethical issues raised in provision of health care and health care administration. Current and historical arguments surrounding ethical issues will be discussed and analyzed. Students will learn to recognize ethical dilemmas, apply ethical principles and resolve the dilemmas.

Offered Infrequent

**HEA 475. Human Resources Management in Healthcare. (3 Units)**

Emphasis on key concepts of human resources management, identifying importance of human resources in healthcare organizations, establishing need for relating strategic planning of organizations to their human resource planning, and on examining role of organizational culture in behavior and productivity.

Offered Spring

**HEA 476. Managing Health Information Systems. (3 Units)**

Prerequisites: HEA 201 and HEA 318 are required. Conceptual and practical aspects in the analysis, development, and utilization of health information technology and systems having clinical and business applications with the focus being on improving organizational performance.

Offered Spring

**HEA 477. Long-Term Care Administration. (3 Units)**

Prerequisite: HEA 201 is required. History, development, trends; major policy issues; organization of systems; principles and techniques of administration, including managing the environment of care and client/resident care services; management of institutional and community-based programs.

Offered Spring

**HEA 478. Strategic Management in Health Care. (3 Units)**

Prerequisites: HEA 318 and HEA 472 are required. Methods for strategic planning and marketing of health services organizations. Techniques for determining strategies for unique services, integration of strategy, structure, and administrative systems.

Offered Spring

**HEA 479. Research Methods in Health Sciences. (3 Units)**

Prerequisite: HEA 313 is required. Overview of research methods in health sciences, including study design, sampling, data collection and analysis, statistical techniques, and report writing. Application of research methods to development of research proposal. Critical analysis of literature. Examination of relevance of data to decision making.

Offered Fall, Spring

**HEA 480. Radiological Physics. (2 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Emphasis of health and safety on electric circuits, generators, x-ray circuits, x-ray physics.

Offered Fall, Spring

**HEA 481. Topographic Anatomy and Positioning II. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Introduces topographic anatomy and positioning procedures necessary to produce diagnostic radiographs of the skull. Exposure control techniques and exam indications included.

Offered Fall

**HEA 482. Special Radiographic Procedures. (2 Units)**

Prerequisite: Admission to the Radiologic Technology Option or consent of instructor. Radiographic anatomy and physiology, positioning, film evaluation and specialized equipment applying to highly technical exams (interventional radiography, tomography, CT and MRI). Management of acutely ill patients. Fee required.

Offered Spring

**HEA 483. Sub-Specialties in Radiology. (2 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Introduction to principles of pediatric radiography, intraoral radiography, radiation therapy and nuclear medicine. Image formation, equipment, techniques and handling of radiation and radionuclides.

Offered Spring

**HEA 485. Departmental Administrative and Office Procedures, Computer Literacy. (1 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Introduction to organization and budgeting of a radiology department; use of computers in radiology and basic computer principles.

Offered Spring

**HEA 487. Clinical Practicum IV. (1 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Supervised rotations through routine radiographic/fluoroscopic, pediatric, surgical and genitourinary rooms. Performs routine exams and film critiques (except skull) in all areas. Practicum 280 hours.

Offered Fall

**HEA 488. Clinical Practicum V. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Supervised rotations through all areas of routine radiography, with student performing all routine diagnostic fluoroscopic and radiographic exams and film critiques, including skull radiography. Student will be able to perform radiologic procedures independently. Practicum 580 hours.

Offered Fall

**HEA 489. Clinical Practicum VI. (3 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Supervised rotations through special radiographic procedures, radiation therapy, magnetic resonance imaging, nuclear medicine, mammography and ultrasound. Continued application in routine radiography, fluoroscopy and film critique. Perform radiologic procedures independently. Practicum 580 hours.

Offered Spring

**HEA 490. Health Science Senior Seminar. (1-3 Units)**

Prerequisites: Senior standing and HEA 479 are required of all majors. For Community Health Option: HEA 461, HEA 463 and HEA 468 are required. For Health Care Management Option: HEA 467 and HEA 478 are required. Undertake in-depth study employing concepts and principles learned in Health Science core and options. Must demonstrate analytic thinking skills and ability to synthesize disparate area knowledge in the development of an original research project. Proficiency in written and oral English language required.

Offered Fall, Spring

**HEA 491. Res Sem Orth/Prosth I. (1 Units)**

Prerequisites: HEA 440 and HEA 450. Background literature review, hypothesis formation, study design, development of data collection instruments and data collection as phase one of orthotic/prosthetic research project. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments. One hour of seminar per week. Fee required.

Offered Fall, Spring

**HEA 492. Research & Seminar in O&P. (2 Units)**

Prerequisite: MAT 131, or consent of instructor. Overview of the principles and applications of research. Examination of testing and improving patient outcomes. Basic concepts in research design, including literature review, identification of research question, development of data collection instruments, data analysis. Write and present a research proposal. Offered Fall, Spring

**HEA 493S. Preceptorship in O&P. (3 Units)**

Prerequisite: Consent of instructor. 125 hour placement in a private sector or institutional facility. Repeatable for credit up to 8 units. Fee required. Offered Fall, Spring

**HEA 494. Independent Study in Health Science. (1-3 Units)**

Prerequisite: Consent of instructor. In-depth study of a health sciences topic under the supervision of a health sciences instructor. Requires independent study contract to be completed before enrollment. Repeatable course. Offered All terms, Fall, Spring

**HEA 495. Spec Topics in Health Sciences. (1-3 Units)**

Prerequisites: HEA 201; Consent of instructor. Intensive study of a Health Sciences topic of special interest to students pursuing a career in the health professions. Topic will vary as announced. One to three hours of lecture per week. Offered All terms, Fall, Spring

**HEA 496. Internship in Health Sciences. (1-6 Units)**

Must be Health Science major; must be a senior; must be accepted in the internship program; consent of instructor required. Corequisite: HEA 497. Students will be directed to health care facilities to serve as interns. Regular meetings are scheduled with a faculty internship supervisor to assess student progress. Up to forty hours per week. Offered Fall, Spring

**HEA 497. Internship Seminar. (1 Units)**

Corequisite: HEA 496 is required. Consent of instructor is required. Students discuss and conduct in-depth analysis of their personal and professional growth and problem-solving skills in relation to their internship experiences. Offered Fall, Spring

**HEA 498. Dir. Research in Hlth. Sci.. (1-3 Units)**

Prerequisites: HEA 201 and consent of instructor. Advanced topics and research on specific subjects in Health Sciences. Topics of research to be approved and directed by an instructor. Offered Fall, Spring

**HEA 499. Senior Project Radiology. (1 Units)**

Prerequisite: Admission to the Radiologic Technology Option. Individual research in radiology with student class presentation: learn presentation skills, use of A-V methods, oral skills, and written presentation. Students must demonstrate proficiency in the English language by successfully completing oral and written assignments. One hour of seminar activity per week. Repeatable for credit for up to one unit. Offered Fall, Spring

**HEA 508. Clinical Pathology for Orthotics and Prosthetics. (3 Units)**

Prerequisites: HEA 455 or consent of instructor. Examination of the etiology, clinical signs and symptoms, treatment, prognosis and social implications of pathological conditions associated with numerous diseases and traumatic injuries that require orthotic and/or prosthetic intervention. Includes introductory Neuroscience and neural disorders encountered in practice. Offered Fall

**HEA 516. Clinical Evaluation Tools in Orthotics and Prosthetics. (2 Units)**

Prerequisite: HEA 455 or consent of instructor is required. Examines the variety of standardized clinical assessment tools to be appropriately used in concert with the clinical examination, as well as evidence from literature, to determine the need for orthotic-prosthetic services and design optimal intervention strategies. Offered Fall

**HEA 535. Practice Management for Orthotics and Prosthetics. (1 Units)**

Prerequisite: HSC 500 is required. Addresses general business practice within orthotic-prosthetic practice, including its role in clinical decision making, documentation, time management and compliance with regulatory agencies, reimbursement and human resource management. Offered Summer

**HEA 536. Psychological Aspects of Disability. (1 Units)**

Prerequisite: HSC 500 is required. Application of psychological concepts to illness and disability. Awareness of social supports and constraints, activities across the lifespan, and integration of these factors into clinical practice. Strategies for dealing with patients in distress, and symptoms requiring referral to other professionals. Offered Summer

**HEA 540. Orthotic Management of the Upper Limb. (3 Units)**

Prerequisites: HEA 508, HEA 516 and HEA 545 are required. Comprehensive study of short-and long-term upper limb orthotic management. Includes evaluation; assessment; treatment plan formulation; implementation and follow-up. Fabrication and fitting of: finger, hand, wrist, forearm, elbow, humeral and shoulder orthoses. Offered Spring

**HEA 541. Orthotic Management of the Lower Limb I. (4 Units)**

Prerequisites: HEA 508, HEA 516 and HEA 545 are required. Comprehensive study of lower limb orthotic management distal to the knee. Includes evaluation and assessment; treatment plan formulation, follow-up and patient education; biomechanics; gait analysis and motor disability. Fabrication and fitting of foot and ankle-foot orthoses. Offered Spring

**HEA 542. Orthotic Management of the Lower Limb II. (5 Units)**

Prerequisite: HEA 541 is required. Comprehensive study of lower limb orthotic patient management proximal to the knee. Includes evaluation and assessment; treatment plan formulation, follow-up and patient education; as well as biomechanics, gait analysis and motor disability. Fabrication and fitting of selected orthoses. Offered Fall

**HEA 544. Orthotic Management of the Spine. (4 Units)**

Prerequisites: HEA 508, HEA 516 and HEA 545 are required. Comprehensive study of spinal orthotic management. Includes evaluation, assessment, treatment plan formulation, implementation of the plan, and follow-up. Fabrication and fitting of selected orthoses is included. Also, presentation of Wheelchair Seating and Cranial Remolding Helmets. Offered Fall

**HEA 545. Normal Gait and Biomechanics of Movement. (2 Units)**

Prerequisites: HEA 455 or consent of instructor. Primary areas of study will include applied anatomy, anthropometry, kinematics, and kinetics, normal human locomotion, force vectors, observational and instrumented gait analysis. Offered Fall

**HEA 547. Gait Analysis and Pathomechanics for O & P. (1 Units)**

Prerequisite: HEA 545 or consent of instructor. Examination and assessment of how and why an individual's gait deviates from normal human locomotion when they are utilizing an orthotic or prosthetic device designed for application distal to the knee.

Offered Fall

**HEA 551. Prosthetic Management of the Upper Limb. (3 Units)**

Prerequisites: HEA 508, HEA 516 and HEA 545 are required.

Comprehensive study of upper limb prosthetic management, including transradial, transhumeral, partial hand, elbow and shoulder disarticulation amputations. Includes evaluation; assessment; treatment plan formulation, implementation and follow-up to promote positive outcomes using evidence-based practice.

Offered Spring

**HEA 552. Prosthetic Management of the Lower Limb I. (4 Units)**

Prerequisites: HEA 508, HEA 516, and HEA 545 are required. Management of amputations distal to the knee, including Transtibial, Symes and Partial Foot. Patient assessment, formulation of treatment plans, and implementation through measurement, casting, fabrication, and fitting of patients. Pathologies, surgical procedures, components, biomechanics, gait and outcome measures.

Offered Spring

**HEA 554. Prosthetic Management of the Lower Limb II. (5 Units)**

Prerequisite: HEA 552 is required. Management of amputations proximal to the knee, including Knee Disarticulation, Trans Femoral and Hip Disarticulation. Includes all aspects of patient assessment, formulation of treatment plans, and implementation through measurement, casting, fabrication and fitting to promote positive outcomes.

Offered Spring

**HEA 580. Applied Technologies in Orthotics and Prosthetics. (1 Units)**

Prerequisite: HSC 500 is required. Integration of non-traditional techniques in the measurement, fabrication, and delivery of devices in contemporary O & P practice. This includes knowledge of computer aided design, electrical circuitry, and biomechanical and biomedical engineering concepts.

Offered Summer

**HEA 592. Subspecialties in Orthotics and Prosthetics. (2 Units)**

Prerequisites: HEA 541, HEA 542, HEA 551 and HEA 552 are required, or consent of instructor. Student driven course in areas of advanced skills, infrequently used devices, or unique goals in O & P. Lecture and demonstration with pediatric, geriatric, recreational and special use clients. Development of evaluation, assessment, and treatment plans through case studies and live interaction.

Offered As needed

**HEA 593. Culminating Activity in Orthotics and Prosthetics. (3 Units)**

Prerequisites: Advancement to Candidacy MS in Health Science:

Orthotics and Prosthetics Option requires a portfolio as the culminating experience. The portfolio is an accumulation of a direct research paper, practical exams, written and written simulation exams, oral exams, gait analysis and clinical patient scenarios.

Offered As needed

**HEA 596. Clinical Practicum in Orthotics and Prosthetics. (1-4 Units)**

Prerequisites: HEA 508 and HEA 516 are required. Fieldwork and in-depth study of discipline related topics under the direction of Division of Health Sciences faculty member. Repeatable for credit for a maximum of eleven (11) units.

Offered Fall, Spring, Summer