

HEALTH SCIENCE

College of Health and Human Services

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The Department offers undergraduate and graduate study in Health Education, and an undergraduate option in Radiation Therapy. For program information, students should contact the department office for referral to one of the faculty advisors: Director of Undergraduate Studies, Director of Radiation Therapy, Director of Graduate Studies or Single Subject Credential Advisor.

All Health Science majors and minors are responsible for requirements specified in the University Catalog. Students should meet periodically with either the Director of Undergraduate Studies, the Director of Radiation Therapy, or the Director of Graduate Studies. Faculty advisors will discuss

and review the student's academic program, program requirements and monitor academic progress. Students also have the responsibility of keeping track of unit totals required for graduation and insuring that these requirements are met.

Program in Health Education

Health education programs help participants enhance health, prevent disease and disability, as well as help improve the well-being of people in organizations, schools, businesses, and communities. The program focuses on environmental influences, which include the cultural and societal context in which health behavior occurs; is also emphasizes processes for developing and changing individual attitudes and behaviors toward health.

The focus of health education is on planned change. Individuals are encouraged to take responsibility for their own health and to assume responsibility for the health of their families and communities.

Our society continues to change and health problems are redefined. Future health advances will not only come from new technology, but also as the result of community, group, and individual actions. These will impact education, lifestyle, environment, and the organization and delivery of health services.

Brochures describing each of the programs are available at the Health Science Department office.

Courses are designed to satisfy Health Science requirements for:

1. general education,
2. the baccalaureate degree major,
3. Single Subject Credential in Health Science,
4. Master of Science Degree with a Major in Health Science,
5. Master of Public Health Degree in Community Health Education.
6. Master of Science in Nursing/Master in Public Health

Bachelor of Science in Health Science

The basic University requirements for graduation with a B.S. Degree in Health Science consist of:

1. completion of general education requirements,
2. completion of all courses identified on the Program Planner for the Option selected, with no grade lower than a "C" for each listed course or approved substitute,
3. completion of a minimum of 124 units, at least 40 units of which must be upper division. Upper division courses are numbered 300 to 499.

Major Core Requirements

All Health Science majors must complete the required core. The core of the Health Science program contains five areas of competence: Statistics, Program Development, Professionalism, Health Services Organization and Health Promotion. All majors must complete at least one course from each competency area. Courses must be selected in consultation with an advisor.

Requirements

Required Core: 15 units.

1. Statistics: H SC 403 or ED P 419*
2. Program Development: H SC 430 or 460
3. Professionalism: H SC 301 or 451
4. Health Services Organization: H SC 401, 420I or 450
5. Health Promotion: H SC 435

NOTE: Health Science students who take EDP 419 must complete prerequisites G.E. Math and lower division statistics.

Option in Radiation Therapy

The Radiation Therapy Option is designed for those individuals who wish to pursue a professional preparation program leading to membership in the health care team using ionizing radiation in the treatment of malignant and some benign diseases. The Option is competency-based and integrates didactic courses and clinical experience to prepare entry level radiation therapists to become integral partners in the health care team and contributing members of the profession. On a daily basis, the registered radiation therapist is involved in:

1. Operating sophisticated radiotherapeutic equipment to deliver prescribed doses of ionizing radiation for treatment of malignant and some benign diseases.
2. Providing psychological and emotional support to patients who are dealing with the stress of their illness.
3. Providing patient education about their disease and all aspects of their treatment.
4. Observing patient's progress and recognizing medical problems that require a physician's attention.
5. Constructing devices to aid in treatment positioning, beam modification, and treatment planning.
6. Calculation of doses and use of treatment planning computers to determine dose distributions.

Successful completion of Option requirements qualifies the student to sit for licensure examinations at the state and national levels to practice as a registered radiation therapist.

This program is accredited by the Joint Review Committee on Education in Radiologic Technology (Joint Review Committee on Education in Radiologic Technology, 20 N Wacker Drive, Suite 900, Chicago, IL 60606-2901, phone: 312-704-5300) and the State of California, Department of Health Services, Radiologic Health Branch.

Pre-Radiation Therapy (code 3-1210)

Preprofessional

Because the Radiation Therapy Option is an impacted program, the student completes all of the prerequisite courses: A/P 207,208, BIOL 200, HSC 200, MATH 119A, PHYS 100A/B, MICR 101, IS 240, ENGL 102. Department core courses HSC 403 and 435 may be taken during the preprofessional component. Several Option prerequisite courses also fulfill GE requirements. In addition to course requirements, the student must complete the following prior to applying to the Option:

1. Complete a minimum 40 hour observation in a radiation therapy department.
2. Successfully complete the Writing Proficiency Exam and

3. Schedule an appointment for consultation with the Radiation Therapy Career Advisement Committee the semester before entry in to the professional preparation program.

Option in Radiation Therapy (code 3-1212) (124 units)

Professional

The professional component is designed so that students enter in the fall semester each year and in a step-wise manner complete the remaining general education, didactic and clinical courses. In order to complete the professional preparation component of the Option, students must fulfill the following requirements:

1. Obtain personal malpractice insurance
2. Maintain full-time student status during the professional program
3. Complete required summer session clinical and didactic courses
4. Complete university required general education courses
5. Complete all of the following courses in sequence with a grade of "C" or better: HSC 150, 320, 310, 451, 340, 315, 470A, 445A, 341, 330, 311, 403, 470B, 445B, 342, 415, 435, 316, 455, 465, 475, 475L, 480, 492A, 492B.

Option in Community Health Education (code 3-1213) (124 units)

The Community Health Education option is designed for persons whose occupational objective is to serve as a community health educator with an official, voluntary, or corporate health agency.

Lower Division: A/P 205, BIOL 200, and either CHEM 100 or 111A; MICR 101; an additional A/P, BIOL or MICR course approved by department advisor.

Upper Division: H SC 301, 400, 401, 402, 403, 405, 421, 430, 435, 440, 485; Three courses selected from the following: H SC 420I, 422, 423, 425I, 427, 429, 490, 499; one course selected from the following: FCS 132 or 430; one course selected from the following: PSY 351 or SOC 335I; one course selected from the following: SOC 320, 336, 445, 462, 464; and one course selected from the following: COMM 332, 334, 335.

Option in School Health Education (code 3-1215) (124 units)

School Health option is designed for persons who desire to pursue a professional preparation program leading to qualification as a health education teacher in the secondary schools.

A teacher credential requires the completion of the Option in School Health Education and additional courses in the College of Education, Single Subject Teacher Education program. EDSS 300D is the prerequisite to begin the Single Subject sequence.

Lower Division: A/P 205 or 342; BIOL 200; CHEM 100 or 111A; BIOL 350 or approved A/P, BIOL, or MICR course; MICR 101; PSY 100; Spanish (3 units) or language equivalent approved by department advisor.

Upper Division: H SC 301, 401, 403, 405, 421, 422, 423, 425I, 427, 430, 435, 440; FCS 132 or 430; PSY 351 or SOC 335I; COMM 335 or approved upper division COMM course; SOC 336.

Option in Health Care (code 3-1216) (124 units)

The Option in Health Care is designed for those individuals who have received certification and/or license from an approved allied health/health care program and desire a Bachelor of Science degree. The focus of this option is the development of professional skills for people whose goal is: (a) providing service, or (b) instructing in the health care setting.

Requirements for Admission to Health Care Option

Once admitted to the University, students are required to complete the following prior to acceptance into the Health Care Option:

1. Obtain certification and/or license from an allied health/health care program from an institution that has been accredited by either a Committee on Post-secondary Accreditation (COPA) approved accreditation agency or the Committee on Allied Health Education and Accreditation (CAHEA). Those individuals who do not have appropriate certification will be counseled by the Department of Health Science regarding where to obtain an appropriate accredited program, and, when possible, concurrent enrollment may be utilized;
2. Earn a minimum GPA of 2.0.

Lower Division: Completion of general education requirements. to include: ENGL 100; one of the following: ANTH 120, SOC 100 or PSY 100; and a minimum of 12 units in Natural Sciences approved by department advisor equivalent to: A/P 205, BIOL 200, and either CHEM 100 or 111A, MICR 101.

Upper Division: (39 units): Required Core: 15 units (one course from each area); courses must be selected in consultation with an option advisor:

1. Statistics: H SC 403, ED P 419;
2. Program Development: H SC 430, 460;
3. Professionalism: H SC 301, 451;
4. Health Organization: H SC 401, 420I, 450;
5. Health Promotion: H SC 435;

Additional Coursework: HCA 411, H SC 452; one of the following: ANTH 353, FCS 430, H SC 400, or SOC 462; one of the following: POSC 329, or ECON 300; An emphasis in either (a) Providing Service (12 units): HCA 410, 465, ED P 434 or NRSNG 202, 202L, and one of the following: ANTH 319, GERN 482, NRSNG 253, or NRSNG 482; or (b) Instructing in Health Care Setting (12 units): POSC 331, H SC 492AB, and one of the following ED P 434, NRSNG 202, 202L.

Minor in Health Science (code 0-1211)

Twenty-four units as follows: H SC 301, 401, 430, 435, 440, and three courses from: H SC 400, 409, 420I, 421, 422, 423, 425I, 427.

Single Subject Credential in Health Science

The Single Subject Credential in School Health prepares one to teach at the secondary level. Requirements include a Bachelor of Science degree in Health Science (School Health option) plus the required professional education courses. See the Health Single Subject Credential Advisor.

Those wishing to pursue a single subject credential in health science should major in the School Health Education Option.

Graduate Program in Health Education

Accredited by the Council on Education for Public Health (Council on Education for Public Health, 1015 Fifteenth Street, NW, Washington, DC 20005, phone: 202-789-1050).

In order to be admitted to the graduate program for study toward a degree, a prospective must apply both to this department and the University. Contact the Director of Graduate Studies for current requirements.

Master of Science in Health Science (code 6-1211)

The Master of Science program is designed to provide students with:

1. intensive study of health education concepts, theories, and processes;
2. introduction of public health concepts and issues;
3. research methodology appropriate to the in-depth examination a health topic.

The graduate student is also prepared for a leadership role in a school or community setting and for admission to doctoral programs at other colleges and universities. Admitted graduate students must contact the Director of Graduate Studies for advisement early in their first semester of enrollment.

Admission Requirements

Applicants must apply both to the Department and the University. Applications are available from the Department office.

1. Each applicant must request a copy of official transcript(s) of all work be sent to the Graduate Director in the Health Science Department in addition to the transcripts required by the Office of Enrollment Services.
2. A bachelor's degree with a major in health education, which articulates with the course requirements for the same degree at California State University, Long Beach; or a bachelor's degree in a related discipline with a minimum of 21 units of upper division course work comparable to those required of the Health Science major at the University; or a bachelor's degree in a related discipline and willingness to make up any deficiencies in prerequisite Health Science courses. Prerequisites for all courses carrying graduate credit must have been completed within seven years of taking the graduate courses. If any prerequisite is outdated, it may be repeated or credit obtained by (1) written examination on the subject matter or (2) providing documented evidence of currency in the subject area.
3. An overall undergraduate GPA of at least 3.0. Students with less than a 3.0 GPA on the last 60 units of undergraduate units attempted, but who show promise in all other aspects, may be given special consideration after petitioning for conditional admission into the program through the Director of Graduate Studies.
4. Acceptance by the University as a student with graduate standing.
5. A maximum of 9 units of approved graduate work at the post-baccalaureate level may be credited to a student's program requirements upon Departmental acceptance to the graduate program.

6. Submission of the CSU graduate application to the Department and analytic, quantitative and verbal scores from the Graduate Record Examination (GRE).
7. Three letters of recommendation from persons with whom the candidate has worked and who have direct knowledge of the applicant's qualifications and potential as a community health educator.
8. A separate personal statement of reasons for pursuing this field of study and comments about interests and experience that are germane to career objectives. Submit a personal resume reflecting the applicant's education and relevant experience.

Advancement to Candidacy

1. Satisfy the general University requirements for advancement to candidacy:
 - A. pass the Writing Proficiency Exam;
 - B. maintain at least a 3.0 average for all course work attempted as a graduate student;
 - C. complete H SC 500, 503, and 570;
2. Approval by the Director of Graduate Studies and the Associate Dean of Academic Programs of the College of Health and Human Services.

Requirements for Completion of the Master of Science Degree

1. A minimum of 43 units of approved upper division and graduate courses including:
 - A. 21 units of Health Science courses, which include HCA 502, H SC 500, 503, 570, 581, 696;
 - B. 18 units of electives in a specialty field;
 - C. 4 units of H SC 698;
2. A thesis with an oral exam.

Master of Public Health

Option in Community Health Education (code 7-1213)

The Master of Public Health in Community Health provides an opportunity for students to specialize in community health education and health promotion within the general context of Public Health, to increase competence in designing, implementing, and evaluating behavior change programs in preparation for serving in various health agencies, prepare for teaching at college and university levels and for administrative positions in public and private health agencies.

Admission Requirements

Applicants must apply both to the Department and the University. Applications are available from the Department office.

1. Each applicant must request that a copy of official transcript(s) of all work be sent to the Director of Graduate Studies (in addition to the copies required by the Office of Enrollment Services).
2. A bachelor's degree with a major in health education, which articulates with the course requirements for the same degree at California State University, Long Beach; or a bachelor's degree in a related discipline with a minimum of 21 units of upper division course work comparable to those required of the Health Science major at the University;

or a bachelor's degree in a related discipline and willingness to make up any deficiencies in prerequisite Health Science courses. Prerequisites for all courses carrying graduate credit must have been completed within seven years of taking the graduate courses. If any prerequisite is outdated, it may be repeated or credit obtained by (1) written examination on the subject matter or (2) providing documented evidence of currency in the subject area.

3. An overall undergraduate GPA of at least 3.0. Students with less than a 3.0 GPA on the last 60 units of undergraduate units attempted, but who show promise in all other aspects, may be given special consideration after petitioning for conditional admission into the program through the Director of Graduate Studies.
4. Acceptance by the University as a student with graduate standing.
5. A maximum of 9 units of graduate work at the post-baccalaureate level may be credited to a student's program requirements upon Departmental acceptance to the graduate program.
6. Submission of the CSU graduate application to the Department and quantitative and verbal scores from the Graduate Record Examination (GRE).
7. Three letters of recommendation from persons with whom the applicant has worked who have direct knowledge of the applicant's professional and academic potential as a health educator.
8. A separate personal statement of reasons for pursuing this field of study and comments about interests and experience that are germane to career objectives. Submit a personal resume reflecting the applicant's education and relevant experience.
9. At least one year's full-time (or equivalent) paid or volunteer experience in Health Education or a closely related health role. Preference will be given to those with greater experience and ability.

Advancement to Candidacy

1. Satisfy the general university requirements for advancement to candidacy:
 - A. pass the Writing Proficiency Examination;
 - B. maintain at least a 3.0 average for all course work attempted as a graduate student;
 - C. complete H SC 500, 503, and 570;
2. Approval by the Director of Graduate Studies and Associate Dean for Academic Programs of the College of Health and Human Services.

Requirements

1. A minimum of 42 units of approved upper division and graduate-level courses including:
 - A. core: HCA 502, H SC 500 -or- MICR 429, H SC 503 -or- BIOL 565 (4), 508, 528, 570, 581, 624, 625, 626, 696;
 - B. Electives at the 500/600 level;
 - C. H SC 585, a supervised internship experience (1-6 units)
2. A comprehensive written examination (see Department for guidelines).

Masters of Science in Nursing/Masters in Public Health (code 7-1074)

The Departments of Nursing and Health Science offer a concurrent Master of Science and Master of Public Health degree available to qualified students who desire advanced preparation in the area of public health nursing with a practice focus on primary prevention, illness prevention, and health promotion. The concurrent program leading to both degrees represents the core accreditation requirements of each degree. Coursework is integrated between the two Departments in each semester in order to provide an intense learning experience.

The philosophy of graduate nurse education is that the practice of nursing is constantly changing as health needs and health delivery systems are altered. Integral to nursing is an ability to work effectively and cooperatively with other disciplines and community services to promote health. The Master of Science and Master of Public Health (Health Education Option) provides the opportunity for students to specialize in advanced practice public health nursing within the general context of the Masters of Public Health, to increase competence in designing, implementing, and evaluating behavior change programs in preparation for serving in various health agencies. The focal point in this curriculum is the Nursing Process, Epidemiological Process Model, and Population Based Theory complemented by behavioral science concepts. Courses are interdependent and have been structured to provide clinical depth in the area of advanced practice public health nursing.

Each applicant should request a copy of official transcript of all college course work be sent to the Department Graduate Advisor of Nursing in addition to the copies required by the Office of Admissions and Records.

Admission Requirements

1. Bachelors degree in nursing or currently enrolled in accelerated RN to Masters program. Those nurses with Baccalaureate degrees in health related fields may be conditionally admitted.
2. Current license to practice as a registered nurse in California.
3. Admission to graduate standing at the University.
4. An upper division or graduate course in biostatistics (HSC 403 or Ed. Stat 419) and an ethics course (HSC 451).
5. Public Health Nurse Certificate, or eligibility for certificate in California.
6. An overall GPA of 3.0 or better; an upper division nursing GPA of 3.0 or better and a science GPA of 3.0 or better. Students who fall below these averages will be evaluated on an individual basis.
7. Submission of quantitative and verbal scores from the Graduate Record Examination (GRE).
8. Three letters of recommendation from persons with whom the applicant has worked and who has direct knowledge of the applicant's qualifications.
9. A separate personal statement of applicant's reasons for pursuing this field of study and comments about interests and experiences which are germane to career objectives.

10. Current professional resume describing the applicant's relevant experience.

Advancement to Candidacy

A joint committee, consisting of Nursing and Health Science faculty involved in the program, will review files and make determination to advance candidate to graduate status.

Student Criteria for Advancement

1. Satisfy the general University requirements for advancement to candidacy in Nursing and Health Science.
 - A. pass Writing Proficiency Examination
 - B. have at least a 3.0 grade point average for all course work attempted as a graduate student
2. Joint approval by the Department of Nursing and Health Science, and the Associate Dean for Academic Programs of the College of Health and Human Services.

Requirements

1. A minimum of 57 units of approved Nursing and Health Science upper division and graduate level courses including:
HSC 500 or MICR 429; HSC 503 or BIOL 565; HSC 508, 528, 535, 570, 581, 624, 625; NRSRG 660A, 660B, 680A, 680B, 680C; NRSRG 680AL, 680BL, 680CL or HSC 626 (in lieu of one 3 unit 680L); NURS 696 or HSC 696; NURS 695 or HSC 697 or NURS 698
2. An overall GPA of 3.0 or better in all courses
3. Comprehensive written examination or directed project or a thesis
4. Graduate degrees obtained previously will be accepted toward meeting the unit requirements of the concurrent MSN/MPH degree program
5. If a student after entering the concurrent MSN/MPH program returns to a single degree program, all requirements for the single degree program must be met
6. Transfer units will not be accepted toward the concurrent MSN/MPH program.

Courses (H SC)

Lower Division

150. Medical Terminology (1)
Development of a medical vocabulary emphasizing the building of terms utilizing prefixes, combining forms and suffixes. Includes symptomatic, therapeutic, diagnostic and operative terms for application in the interpretation of medical records as needed in Radiation Therapy. (Lecture-discussion 1 hour.) Traditional grading only.
200. Orientation to Radiation Therapy (3)
Orientation to the Option in Radiation Therapy, professional organizations, career opportunities, department structure, patient management, record keeping, and professional ethics. An overview of the role of radiation therapy in the treatment of cancer and the Radiation Therapist in the field of Radiology. 40 hours of clinical fieldwork required. Traditional grading only.
210. Contemporary Health Problems (3)
Development of modern health knowledge, attitudes and behavior; includes family life-sex education, drug use and abuse, mental health, medical quackery and health frauds, common diseases such as sexually transmitted diseases, heart disease and cancer.

Upper Division

301. Orientation to Health Science (3)

Overview of the philosophy of the Health Science Dept. Orientation to the degree requirements, career opportunities, and the theoretical and practical issues of health education as a profession. Must be taken prior to H SC 401 and 430.

305. Computer Methods for Health & Human Services (3)

Prerequisite: Upper division standing. Overview of sources and uses of administrative, program evaluation and research data. Introduction to the logic and application of computer functions through experience analyzing data from specific sources (e.g., school and community health, health services). Variety of application software utilized. Traditional grading only. (Lecture 2 hours, Laboratory 3 hours)

310. Radiation Therapy Patient Care I (2)

Prerequisite: Admission to the Radiation Therapy Option Professional Preparation or consent of instructor. This course focuses on the role of the radiation therapist, communication, self care, basic patient care, patient assessments and examinations. Emphasis is on infection control, medical emergencies, care of patients with tubes, basic pharmacology and medication administration. Traditional grading only.

311. Radiation Therapy Patient Care II (2)

Prerequisites: Admission to the Radiation Therapy Option Professional Preparation or consent of instructor, HSC 310. Continuing study of patient care in radiation therapy. This course focuses on the psychosocial aspects of cancer diagnosis, death and dying, patient education and intervention for treatment related sequelae. Includes an examination of local, state and national cancer resources. Traditional grading only.

315. Seminar in Radiation Therapy I (2)

Prerequisites: Concurrent enrollment in HSC 492A, admission to the Radiation Therapy Option Professional Preparation or consent of instructor. Introduction to the clinical radiation therapy arena which includes: patient population and statistics, patient flow in the department, various components of a department, interdepartmental interactions and interactions with other departments, and the exploration and discussion of the various treatment modalities available. Traditional grading only. (Lecture discussion, 2 hrs)

316. Seminar in Radiation Therapy II (2)

Prerequisites: Concurrent enrollment in HSC 492B, admission to the Radiation Therapy Option Professional Preparation or consent of instructor. Comprehensive analysis of case studies in the clinical setting. This will include a thorough review of a patient's history and treatment rationale. Traditional grading only. (Lecture discussion, 2 hours)

320. Radiologic Techniques and Imaging Modalities (3)

Prerequisites: Admission to Radiation Therapy Option Professional Preparation or consent of instructor. Introduction to radiographic procedures, equipment, technique development, equipment maintenance as well as darkroom equipment, operation and film processing. An examination of the various modalities of radiologic diagnostic imaging. (Lecture-discussion 2 hrs, Lab 1 hr.) Traditional grading only.

330. Topographic Anatomy (2)

Prerequisites: A/P 202, 207, Admission to Radiation Therapy Option Professional Preparation or consent of instructor. Examination of external anatomic landmarks in relation to internal anatomy with emphasis on the effects of positioning on external landmarks, internal anatomic critical structures, and methods of avoiding or lowering radiation dose to these structures. Interpretation of port films and other diagnostic films is included. (Lecture-discussion 2 hr.) Traditional grading only.

340. Clinical Radiation Therapy (3)

Prerequisites: H SC 200, 320, Admission to Radiation Therapy Option Professional Preparation or consent of instructor. Rationale of radiation therapy treatments; construction of immobilization devices, contours, bolus, and positioning aids. Examination of simulation procedures, contrast media, film, treatment positioning, beam modifiers, patient monitoring, and radiotherapeutic machine operation. (Lec-discussion 2 hrs, Lab 2 hrs.) Traditional grading only.

341. Clinical Radiation Therapy II (1)

Prerequisites: HSC 340, concurrent enrollment in HSC 445A, admission to the Radiation Therapy Option Professional Preparation or consent of instructor. Examination of site specific techniques used in radiation therapy. Focus will be on techniques used to treat cancers of the skin, head and neck, lung, esophagus, breast, gastrointestinal, kidney and bladder. Traditional grading only. (Lecture discussion, 1 hour)

342. Clinical Radiation Therapy III (1)

Prerequisites: Concurrent enrollment in HSC 445B, admission to the Radiation Therapy Option Professional Preparation or consent of instructor. Examination of site specific techniques used in radiation therapy. Focus will be on techniques used to treat cancers of the reproductive system, central nervous system, eye, endocrine and major digestive glands, bone, soft tissues, blood, lymphatics and pediatric solid tumors. Traditional grading only. (Lecture discussion, 1 hour)

400./500. Principles of Epidemiology (3)

Prerequisites: H SC 301 and 403. Application of epidemiologic procedures to the understanding of the occurrence and control of infectious and chronic diseases, mental illness, environmental health hazards, accidents, and geriatric problems. (Lecture 3 hours)

*401. Community Health Education (3)

Prerequisite: H SC 301 and H SC 430. Concepts of community health education with emphasis on community organization; application of these concepts to health education activities of official, voluntary and professional health agencies.

*402. Applied Concepts of Community Health Education (3)

Prerequisites: H SC 301, 430, 435. Identification and application of concepts unique to community health education; includes examination of theoretical foundations, marketing and promotion techniques, and application of health education strategies.

*403. Community Health Statistics (3)

Prerequisites: G.E. math and SOC 250 or PSY 210 or equivalent. Representative topics are descriptive statistics, sample designs, central tendency, and variability. Statistical tools for inferential analyses include hypothesis testing, statistical power, and parameter estimation. An introduction to bivariate analyses is provided. (Lecture 2 hours, Laboratory 2 hours)

405. Health Education Program Evaluation and Measurement (3)

Prerequisite: H SC 403 or equivalent. Design, use of standardized measurements, data collection, analysis, and reporting are used to develop evaluation skills to facilitate program management. Impact of activities aimed at producing behavior change in communities, organizations, groups and individuals will be examined. (Discussion 3 hrs)

411A. Health Science for Elementary Teachers (3)

Prerequisite: Upper division standing. Co-requisite: Current CPR Certification required. Contemporary teaching of health education in elementary schools; emphasizes drug use and abuse, human sexuality, community and human ecology (meets state credential requirement for health education). Not open to Health Science majors or minors.

411B. Health Science for Secondary Teachers (3)

Prerequisite: Upper division standing. Co-requisite: Current CPR Certification required. Contemporary teaching of health education in secondary schools; emphasizes drug use and abuse, human sexuality, community and human ecology (meets state credential requirement for health education). Not open to Health Science majors or minors.

415. Radiation Biology (2)

Prerequisites: A/P 207, Admission to Radiation Therapy Option Professional Preparation or consent of instructor. An examination of: the effects of radiation at the cellular, tissue and organ levels; the cell survival curve, Linear Energy Transfer, (LET), Radiobiological Effectiveness, (RBE), radiation sensitizers and protectors; the effects of whole body acute radiation as well as the developing embryo; the radiobiological basis for radiation therapy treatments and fractionation. (Lecture-discussion 2 hours) Traditional grading only.

420I. International Health (3)

Prerequisites: ENGL 100 and upper division status. Analysis of current health problems in the world; examination of contributing social, psychological, physical, legal and cultural factors; international programs for the improvement of world health; structure and functions of world health agencies and organizations.

421. Health Behavior (3)

A survey of contemporary research on the health effects of human behavior. Special emphasis is given to current issues of health behavior, decision-making in contemporary society, values clarification and contemporary theories of behavior change (e.g., health belief model).

422. Environmental Health (3)

An examination of the reciprocal relationship existing between man and his environment, with the emphasis directed toward the health related consequences of man's actions in the environment.

423. Consumer Health (3)

Effective selection of health information, products and services; medical quackery and fraudulent health practices; laws and agencies protecting the consumer; health care delivery systems; and influences of corporate control on the consumer movement in contemporary society.

424./524. Principles of Asian Health Sciences (3)

Prerequisite: Upper division standing. Presents the philosophical, historical, clinical and scholarly qualities of Asian health sciences to promote health, prevent disease and treat illness. Comparisons are made with selected Asian and western health care systems and individual health practices. Traditional grading only. Same course as A/ST 424./524. (Discussion, 3 hours)

425I. Human Sexuality and Sex Education (3)

Prerequisites: ENGL 100 and upper division status. Recommended: PSY 100. Biomedical, sociological, and psychological aspects of human sexuality, the communication of sexual information, the implementation, content and evaluation of family life and sex education in the schools.

427. Drugs and Health (3)

Prerequisite: Upper division standing. Study of psychoactive drugs with primary attention to alcohol, nicotine, caffeine, cannabis, hallucinogens, narcotics and other drugs; examination of trends, philosophical issues and behavioral practices associated with drug use and dependence. Includes physiological psychosocial, legal, historical, philosophical and political aspects; treatment-rehabilitation activities and programs; and drug abuse prevention education. Not open to students with credit in H SC 327.

429. Stress Reduction (3)

Recognition of stress and its causes. Physical and mental symptoms of stress. Influences which reduce or create stress; methods of coping.

*430. School Health Program (3)

Prerequisite: H SC 301. Intensive analysis of the philosophy, organization and legal aspects of the school health program. Includes school and community coordination for a team approach to health education for the school age individual.

435./535. Health Promotion and Risk Reduction (3)

Prerequisites: H SC 421 or consent of instructor. Health promotion/risk reduction program content, development and implementation for use in corporate, hospital and public settings. Intended primarily for Health Science majors. (Discussion 3 hours)

*440. Applied Concepts of Health Science (4)

Prerequisite: H SC 430. Identification and application of the concepts and modes of inquiry unique to the discipline of health science; development of appropriate curriculum based upon an analysis of individual, school and community needs and interests. (Lecture 3 hours; laboratory 3 hours) Traditional grading only.

445A. Oncologic Pathology I (3)

Prerequisites: A/P 202, 207, H SC 150, Admission to Radiation Therapy Professional Preparation or consent of instructor. Examination of oncologic pathology with emphasis on malignant neoplasia; specific attention is given to epidemiology, etiology,

detection, diagnosis, staging, histopathology, metastatic pattern, treatment options and principles of radiation therapy treatments. Examines cancers of the head and neck, lung, breast, gastrointestinal tract, kidney, and bladder. (Lecture-discussion 3 hours) Traditional grading only.

445B. Oncologic Pathology II (3)

Prerequisites: H SC 445A, Admission to the Radiation Therapy Option Professional Preparation or consent of instructor. Continuation of 445A with specific attention given to cancers of the reproductive system, central nervous system, eye, skin, endocrine and major digestive glands, bone, soft tissue, blood, lymphatic system and pediatric solid tumors. (Lecture-discussion 3 hours) Traditional grading only.

*450. The Health Care Professional in the United States (3)

Identification of the role and function of the health care professional; legal aspects of health care delivery; factors influencing the quality of health care, problems from consumers' viewpoints; cultural influences; governmental involvement and current issues in health care; examination of health care in the United States.

*451. Ethics Professionalism in Health Care (3)

Examination of professionalism and bioethics, and the process of making moral decisions; ethical issues; professional oaths and codes of ethics; health care ethics and the law.

455. Quality Management in Radiation Therapy (1)

Prerequisites: HSC 470B, admission to the Radiation Therapy Option Professional Preparation or consent of instructor. A review of the principles of quality management with an emphasis on specific quality assurance tests in radiation therapy. Students will be given the opportunity to either perform or observe a demonstration of each quality assurance test. Traditional grading only.

*460. Health Care Program Development (3)

Examination of the process of health care, program development, identification of contemporary health care philosophy, needs, legal aspects, objectives and community involvement as related to program development; process of conducting a needs assessment; factors affecting development; regionalization; grantsmanship.

465. Radiation Therapy in the Health Care Industry (3)

Prerequisite: Admission to the Radiation Therapy Option Professional Preparation or consent of instructor. Examination of the health care market with emphasis on current radiation therapy trends in the health care environment. This class will focus on various radiation therapy operational and budgetary issues, hospital and governmental accreditation, types of insurance and reimbursements. Traditional grading only. (Lecture discussion, 3 hours)

470A. Clinical Radiation Physics I (3)

Prerequisites: PHYS 100A,B; admission to Radiation Therapy Option Professional Preparation or consent of instructor. Nature and description of the structure of matter and energy; interactions of photons and gamma radiation; instrumentation and measurement of ionizing radiation, beam quality, and dose; percentage depth dose, tissue air ratios, treatment dose calculations. (Lecture-discussion 2 hours, Laboratory 2 hours) Traditional grading only.

470B. Clinical Radiation Physics II (3)

Prerequisites: H SC 470A, Admission to Radiation Therapy Option Professional Preparation or consent of instructor. A continuation of H SC 470A with emphasis on electron beam characteristics and use in radiation therapy, brachytherapy, radioactive sources, implantation methods and dosimetry. An overview of hyperthermia, particle radiation and radiation protection. (Lecture-discussion 2 hours, Laboratory 2 hours) Traditional grading only.

475. Treatment Planning – Dosimetry (2)

Prerequisites: H SC 470A,B, Concurrent enrollment in H SC 475L, Admission to Radiation Therapy Option Professional Preparation or consent of instructor. Examines the effects of treatment distance, field weighting, beam modifiers, irregular fields, tissue inhomogeneities and tissue compensation on dose. Dose calculations for external photon and electron beams. (Lecture-discussion 2 hours) Traditional grading only.

475L. Treatment Planning – Dosimetry Laboratory (1)
Prerequisites: Concurrent enrollment in H SC 475. Admission to Radiation Therapy Option Professional Preparation or consent of instructor. Practical experience with clinical situations in regards to calculation of treatment time/monitor units, gapping, irregular fields, rotational and arc treatments. Use of isodose curves for hand dose summations and treatment planning computer for complex field arrangements. (Laboratory 3 hours) Traditional grading only.

480. Advanced Radiation Therapy (2)
Prerequisites: Must be in final semester of Radiation Therapy Option Professional Preparation. Synthesis of previous didactic and clinical information; an in depth examination of current and future professional issues, technological advances and ethics; a look at professional preparation, organizations and continuing education. (Lecture-discussion 2 hours) Traditional grading only.

*485. Internship in Health Education (3)
Prerequisites: H SC 401 and consent of instructor. Supervised observation and field experience in community health education as conducted by official, voluntary and professional health organizations.

490. Independent Studies in Health Science (1-3)
Prerequisite: Consent of instructor. Students will conduct independent library or laboratory research under the supervision of a faculty member and write a report of the investigation. May be repeated for a maximum of six units.

492A. Internship in Health Care (1-7)
Prerequisite: Consent of instructor. Supervised observation and field experience in community health and medical facilities. Student responsible for successful completion of clinical objectives applicable to area of observation. Traditional grading only. Course may be repeated for a maximum of seven units.

492B. Internship in Health Care (1-9)
Prerequisites: Consent of instructor. Supervised observation and field experience in community health and medical facilities. Student responsible for successful completion of clinical objectives applicable to area of observation. Traditional grading only. Course may be repeated for a maximum of nine units.

*499. Special Studies (1-3)
Group investigation of selected topics. Topics to be announced in the Schedule of Classes. May be repeated for credit to a maximum of 9 units with change of topic.

Graduate Division

500./400. Principles of Epidemiology (3)
Prerequisites: H SC 301 and H SC 403. Application of epidemiologic procedures to the understanding of the occurrence and control of infectious and chronic diseases, mental illness, environmental health hazards, accidents, and geriatric problems. (Lecture 3 hours.)

503. Advanced Community Health Statistics (3)
Prerequisite: H SC 403 or equivalent. Analysis and interpretation of quantitative health education/public health data. Topics include expanded discussion of parametric techniques (e.g., hypothesis testing, confidence interval estimation, power functions, small sample sizes). Other topics include multivariate analyses, non-parametric tests, regression analysis. Use of computers required. Traditional grading only. (Discussion, 3 hours)

508. Administrative Relationships in Health Education Programs (3)
Prerequisite: Undergraduate major in Health Science or related field. Introduction to administrative theory; investigation of administrative responsibilities and functions implicit in school health or other health education programs.

516. Health Promotion in Organizational Settings (3)
Prerequisite: H SC 570. Exploration of health promotion programs in worksite settings, health services, business and industry. Assessment of the organizational climate for health promotion and principles for maintaining program viability and

vitality. Strategies for developing and conducting health promotion programs in these settings. Traditional grading only. (Discussion, 3 hours)

524./424. Principles of Asian Health Sciences (3)
Prerequisite: Upper division standing. Presents the philosophical, historical, clinical and scholarly qualities of Asian health sciences to promote health, prevent disease and treat illness. Comparisons are made with selected Asian and western health care systems and individual health practices. Traditional grading only. Same course as A/ST 524./424. (Discussion, 3 hours)

528. Advanced Environmental Health (3)
Prerequisite: H SC 422 or consent of instructor. Organization and methods for promoting human health by controlling environmental factors.

535./435. Health Promotion and Risk Reduction (3)
Prerequisites: H SC 421 or consent of instructor. Health promotion/risk reduction program content, development and implementation for use in corporate, hospital and public settings. Intended primarily for Health Science majors. (Discussion 3 hours)

570. Theoretical Concepts and Issues in Health Science (3)
Identification and analysis of current trends, philosophies and issues in health science.

581. Curriculum Development in Health Education (3)
Prerequisites: H SC 430, 440. Principles of curriculum development; selection and evaluation of resource materials; theory and practice in measurement in health education.

585. Health Education Internship (1-6)
Prerequisite: Consent of the instructor. Extended applied experience under guidance of faculty and preceptors in an approved health education practice setting. Traditional grading only. (480 hours of field placement or the equivalent experience.)

590. Independent Study (1-3)
Independent research conducted under the supervision of a full-time faculty member resulting in a written report of the investigation. Traditional grading only. Repeatable to a maximum of 6 units with different topics.

624. Seminar in Community Analysis and Program Planning (3)
Prerequisites: H SC 625 or consent of instructor. Process and techniques of community analysis and program planning.

625. Advanced Community Health Education (3)
Prerequisites: H SC 401 and 485; or consent of instructor. Advanced study of educational and related theory applicable to the conduct of health education programs in community and other settings. Methods of promoting change; role as program and staff director and evaluation techniques.

626. Integrative Seminar in Public Health (3)
Prerequisites: H SC 570, advancement to candidacy. Summative critical analysis of current methodologies, research, and practices in public health and health education in particular. Synthesis of coursework, internship, and other relevant experiences in the graduate program. Traditional grading only.

696. Research Methods (3)
Prerequisites: Undergraduate major in Health Science or related field; undergraduate course in statistics. Introduction to research methodology in the area of Health Science.

697. Directed Studies (1-3)
Prerequisite: Advancement to candidacy. Independent investigation of research problems in health education.

698. Thesis (1-3)
Prerequisites: H SC 696, advancement to candidacy. Planning, preparation and completion of an approved thesis.