Department of Environmental and Radiological Health Sciences

Office in Environmental Health Building, Room 122  
(970) 491-7038  
cvmbs.colostate.edu/erhs

Professor Jac Nickoloff, Department Head

Undergraduate

Majors
• Major in Environmental Health

Minors
• Minor in Environmental Health

Graduate

Graduate Programs in Environmental and Radiological Health Sciences

The department offers graduate programs leading to Master of Science and Doctor of Philosophy Degrees in Environmental Health and Radiological Health Sciences. Areas of emphasis in environmental health include epidemiology, occupational health, industrial hygiene, ergonomics, and environmental toxicology. Areas of emphasis in Radiological Health include cancer biology, cellular and molecular radio-biology, radiation oncology, radiation protection/health physics, radiochemistry, radioecology, and veterinary radiology. Students interested in graduate work should refer to the Academic Policies, Guidelines and Requirements for Graduate Students (http://csu-cvmbs.colostate.edu/Documents/erhs-graduate-student-handbook.pdf) and the Department of Environmental and Radiological Health Sciences (http://www.cvmbs.colostate.edu/erhs).

Master Programs
• Master of Science in Environmental Health, Plan B, Environmental Health and Safety Specialization
• Master of Science in Environmental Health, Plan A, Epidemiology Specialization
• Master of Science in Environmental Health, Plan B, Epidemiology Specialization
• Master of Science in Environmental Health, Ergonomics Specialization
• Master of Science in Environmental Health, Industrial Hygiene Specialization, Plan A
• Master of Science in Environmental Health, Industrial Hygiene Specialization, Plan B
• Master of Science in Environmental Health, Toxicology Specialization, Plan A
• Master of Science in Environmental Health, Toxicology Specialization, Plan B
• Master of Science in Radiological Health Sciences, Plan A, Health Physics Specialization
• Master of Science in Radiological Health Sciences, Plan B, Health Physics Specialization
• Master of Science in Toxicology, Plan A
• Master of Science in Toxicology, Plan B

Ph.D.
• Ph.D. in Environmental Health, Epidemiology Specialization
• Ph.D. in Environmental Health, Ergonomics Specialization
• Ph.D. in Environmental Health, Industrial Hygiene Specialization
• Ph.D. in Environmental Health, Toxicology Specialization
• Ph.D. in Radiological Health Sciences*
• Ph.D. in Toxicology

* Please see department for program of study.

Courses
Environmental and Radiological Health Services (ERHS)

ERHS 174 Freshman Scholar  Credit: 1 (1-0-0)
Course Description: Scholarship-supported exploration of biomedical research theory and practice.
Prerequisite: None.
Registration Information: Admission to CVMBS Freshman Scholar’s Program required. Up to 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 192 Environmental Health First Year Seminar  Credit: 1 (1-0-0)
Course Description: Introduction to biosciences, college life, learning skills, problem solving, and degree planning.
Prerequisite: None.
Registration Information: Freshman standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 210 Cancer Biology, Medicine, and Society  Credits: 2 (2-0-0)
Course Description: A broad overview of cancer biology and cancer medicine.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 220 Environmental Health  Credits: 2 (2-0-0)
Course Description: Impact of people on the physical and biological environment as well as impact of the environment on people; emphasis placed on human health.
Prerequisite: BZ 101, may be taken concurrently or BZ 110, may be taken concurrently or BZ 120, may be taken concurrently or LIFE 102, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 230 Environmental Health Field Methods  Credits: 3 (0-6-0)
Course Description: Field and laboratory techniques necessary for practice of environmental health.
Prerequisites: CHEM 113 with a minimum grade of C and CHEM 114 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 320 Environmental Health - Water and Food Safety  Credits: 3 (3-0-0)
Course Description: Water quality and food safety for practice of environmental health.
Prerequisite: MIP 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 332 Principles of Epidemiology  Credits: 3 (3-0-0)
Course Description: Use of epidemiological methods in studying distribution of diseases in human populations.
Prerequisites: (STAT 301, may be taken concurrently or STAT 307, may be taken concurrently) and (MIP 300, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 350 Industrial Hygiene and Air  Credits: 3 (3-0-0)
Course Description: Industrial and airborne hazards, disease prevention, hazard control and evaluation.
Prerequisites: (BMS 300 and ERHS 230 and PH 122) and (CHEM 341, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 400 Radiation Safety  Credits: 3 (3-0-0)
Course Description: Radiation physics, dosimetry, radiation measurement, emergencies and waste management. Essentials of radiation safety.
Prerequisites: CHEM 112 and ERHS 300 and PH 122.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 405 Fundamentals of Ergonomics  Credits: 2 (2-0-0)
Course Description: Basic skills, knowledge, and abilities in ergonomics; focus on musculoskeletal injury prevention.
Prerequisite: None.
Registration Information: One college-level animal biology or anatomy/physiology or engineering design course or concurrent registration. Offered as an online course only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 410 Environmental Health and Waste Management  Credits: 3 (3-0-0)
Course Description: Recognition of impacts, occupational and environmental, in handling wastes; administrative management for waste programs.
Prerequisites: (CHEM 245, may be taken concurrently or CHEM 343, may be taken concurrently or CHEM 346, may be taken concurrently) and (ERHS 230).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 430 Human Disease and the Environment  Credits: 3 (3-0-0)
Course Description: Overview of the human diseases which are associated with the environment.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 446  Environmental Toxicology  Credits: 3 (3-0-0)
Course Description: Essentials of environmental toxicology based on problem-oriented discussions addressing environmental impacts of organic/inorganic chemicals.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 448  Environmental Contaminants: Exposure and Fate  Credits: 3 (3-0-0)
Course Description: Pathways of exposure and behavior of environmental contaminants. Exposure assessment in environmental health protection.
Prerequisites: (CHEM 245 or CHEM 341 or CHEM 345) and (LIFE 102).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 450  Introduction to Radiation Biology  Credits: 3 (3-0-0)
Course Description: Genetic and somatic effects of radiation on cells, tissues, and the whole organism; tumor therapy; carcinogenesis; risks vs. benefits of radiation.
Prerequisites: LIFE 102 and PH 122, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 479  Environmental Health Practice  Credit: 1 (0-0-1)
Course Description: Networking, preparation of resume and statement of qualifications for professional internship or employment.
Prerequisite: ERHS 230, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 487  Internship-Environmental Health  Credits: Var[4-7]
Course Description: Professional field practice in environmental health with a public or private sector agency.
Prerequisite: ERHS 479.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 494  Independent Study in Environmental Health  Credits: Var[1-18]
Course Description: Directed independent study or project under faculty guidance.
Prerequisite: ERHS 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 498  Research  Credits: Var[1-4]
Course Description: Research in environmental and radiological health sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 502  Fundamentals of Toxicology  Credits: 3 (3-0-0)
Course Description: Fundamental principles of toxicology; dose-response, organ targets, toxic agents.
Prerequisites: (BMS 300 or BMS 360) and (CHEM 245 or CHEM 341 or CHEM 345).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 503  Toxicology Principles  Credit: 1 (1-0-0)
Course Description: Principles of toxicology for applications in industrial hygiene and environmental public health.
Prerequisites: CHEM 113 and LIFE 102.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 504  Occupational and Environmental Toxicology  Credits: 2 (2-0-0)
Course Description: Toxic effects of harmful agents found in occupational and environmental settings.
Prerequisite: ERHS 446 or ERHS 502 or ERHS 503, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 510  Cancer Biology  Credits: 3 (3-0-0)
Course Description: Cancer biology, from epidemiology and classification, through the molecular basis of the phenotypes to detection and treatment.
Prerequisite: BC 351 or BC 403, may be taken concurrently or BZ 310 or CM 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 515  Non-Ionizing Radiation Safety  Credits: 2 (2-0-0)
Course Description: Evaluation and safe use of non-ionizing radiation sources. Calculation of safe distances for exposure and maximum permissible exposures.
Prerequisites: (CHEM 107 or CHEM 113) and (MATH 118) and (PH 122 or PH 142).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 520  Environmental and Occupational Health Issues  Credits: 3 (3-0-0)
Course Description: Issues in environmental and occupational health sciences in the context of public health and regulatory concerns.
Prerequisite: BZ 110 or CHEM 103 or CHEM 107 or CHEM 111 or ERHS 220 or LIFE 102.
Registration Information: Admission to the Master of Public Health program can be substituted for LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 526  Industrial Hygiene  Credits: 3 (3-0-0)  
Course Description: Theory and application of industrial hygiene principles to management of the occupational environment.  
Prerequisites: (CHEM 245 or CHEM 341 or CHEM 345) and (ERHS 520, may be taken concurrently) and (PH 110 or PH 121).  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 527  Industrial Hygiene Laboratory  Credit: 1 (0-3-0)  
Course Description: Industrial hygiene field monitoring equipment and techniques.  
Prerequisite: ERHS 526, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 528  Occupational Safety  Credits: 3 (3-0-0)  
Course Description: Introduction to occupational safety hazard recognition and control.  
Prerequisite: ERHS 526, may be taken concurrently.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 530  Radiological Physics and Dosimetry I  Credits: 3 (3-0-0)  
Course Description: Theory and detection of ionizing radiation; measurement and calculation of exposure and dose.  
Prerequisites: (MATH 155 or MATH 160) and (PH 122).  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 531  Nuclear Instruments and Measurements  Credits: 2 (1-3-0)  
Course Description: Instrument systems for measurements and identification of ionizing radiations.  
Prerequisite: ERHS 530, may be taken concurrently.  
Registration Information: Must register for lecture and laboratory.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 532  Epidemiologic Methods  Credits: 3 (2-0-1)  
Course Description: Method of epidemiologic investigation and study design. Applications to disease control with literature examples.  
Prerequisite: ERHS 307 or STAT 307.  
Registration Information: Must register for lecture and recitation.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 536  Advanced Occupational Health  Credits: 3 (3-0-0)  
Course Description: Advanced topics in occupational health emphasizing contemporary issues, topics, trends, and problems in the field of industrial hygiene.  
Prerequisite: ERHS 446 or ERHS 526.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 540  Principles of Ergonomics  Credits: 3 (3-0-0)  
Course Description: Theory and practice of ergonomics.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 541  Ergonomics in Product and Process Design  Credits: 3 (3-0-0)  
Course Description: Application of ergonomics to design of products and processes with respect to health, safety, function, and quality.  
Prerequisite: ERHS 540.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 542  Biostatistical Methods for Qualitative Data  Credits: 3 (3-0-0)  
Also Offered As: STAT 542.  
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.  
Prerequisite: STAT 301 or ERHS 307 or STAT 307.  
Registration Information: Credit not allowed for both ERHS 544 and STAT 544.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 544  Biostatistical Methods for Quantitative Data  Credits: 3 (3-0-0)  
Course Description: Statistical analysis of categorical data as obtained in epidemiology, toxicology, occupational health, and clinical sciences.  
Prerequisite: STAT 301 or ERHS 307 or STAT 307.  
Registration Information: Credit not allowed for both ERHS 544 and STAT 544.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 546  Environmental Exposure Assessment  Credits: 2 (2-0-0)  
Course Description: Approaches and techniques for quantitative characterization of environmental exposure to harmful agents via inhalation, ingestion, and dermal pathways.  
Prerequisite: CHEM 113.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ERHS 547  Equipment and Instrumentation  Credits: 3 (0-6-0)  
Course Description: Sample collection, quality control, theory and application of equipment and instrumentation for analysis and confirmation of organic-inorganic chemicals.  
Prerequisite: ERHS 446 or ERHS 502.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.
ERHS 549  Environmental Health Risk Assessment  Credits: 3 (3-0-0)  
Course Description: Environmental contamination and health effects of chemicals using risk assessment, management and communication approaches.  
Prerequisite: ERHS 332 or ERHS 446 or ERHS 502 or ERHS 503 or ERHS 532.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 550  Principles of Radiation Biology  Credits: 5 (5-0-0)  
Course Description: Dose-response relationships; physical, chemical, and biological modification of radiation damage; radiation oncology; radiation genetics and oncogenesis.  
Prerequisites: (BZ 310) and (ERHS 300 or ERHS 530).  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 555  Quantitative Methods for Radiation Safety  Credits: 3 (3-0-0)  
Course Description: Analytical methods used in health physics, radioecology and radiochemistry. Quantification of uncertainty in radioactive samples and dosimetry.  
Prerequisite: ERHS 530, may be taken concurrently.  
Registration Information: Sections may be offered: Online.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 555A  Monte Carlo Methods in Health Physics  Credits: 3 (3-0-0)  
Course Description: Monte Carlo methods for the assessment of complex systems or macroscopic quantities on basis of statistical nature of microscopic components.  
Prerequisite: ERHS 530, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 561  Radiation Public Health  Credits: 2 (2-0-0)  
Course Description: Aspects of radiation public health for students in health physics with emphasis on contemporary issues in radiation protection.  
Prerequisites: ERHS 530 and ERHS 550, may be taken concurrently or ERHS 300 and ERHS 400.  
Registration Information: ERHS 400 with written consent of instructor or ERHS 530.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 563  Environmental Contaminant Modeling I  Credits: 2 (2-0-0)  
Course Description: Mathematical modeling of radionuclide and chemical transport in aquatic and terrestrial ecosystems.  
Prerequisite: MATH 155.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

ERHS 565  Chemical and Biological Warfare Agents  Credits: 2 (2-0-0)  
Course Description: Current understanding of chemical and biological agents used in asymmetric warfare.  
Prerequisite: CHEM 245 or CHEM 346.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 566  Forensic Toxicology  Credits: 3 (2-2-0)  
Course Description: Toxic effects of commonly encountered abused substances and laboratory methods to identify and measure these.  
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ERHS 567  Cell and Molecular Toxicology Techniques  Credits: 3 (0-6-0)  
Course Description: Hands-on techniques exposure to molecular toxicology.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ERHS 568  Pharmaceutical and Regulatory Toxicology  Credits: 3 (3-0-0)  
Course Description: Toxicology as applied in public (regulatory) and private (pharmaceutical, industrial) sectors.  
Prerequisite: ERHS 502.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 570  Radioecology  Credits: 2 (2-0-0)  
Course Description: Environmental transport and exposure assessment of radioactive and other contaminants; estimating risk for human health and ecological impacts.  
Prerequisite: None.  
Registration Information: Sections may be offered: Online.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

ERHS 595B  Independent Study: Large Animal Radiology  Credits: Var[1-18]  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

ERHS 595D  Independent Study: Radiation Therapy  Credits: Var[1-18]  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
ERHS 595E  Independent Study: Radiation Physics  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595F  Independent Study: Dosimetry  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595G  Independent Study: Radiation Chemistry  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595H  Independent Study: Radiation Biology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595I  Independent Study: Radiological Health  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595J  Independent Study: Radiation Ecology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595K  Independent Study: Microcomputer Analysis  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 601  Metabolism and Disposition of Toxic Agents  Credits: 3 (3-0-0)
Course Description: Metabolism of toxic agents and effects on their fate in the body. Covalent and non-covalent interactions with cellular targets.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 602  Toxicological Mechanisms  Credits: 3 (3-0-0)
Course Description: Role of cellular information systems in toxic mechanisms: DNA expression, signal transduction and control of cellular processes.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 603  Toxicological Pathology  Credits: 3 (3-0-0)
Course Description: Toxicological study of pharmacologic, chemical and environmental agents and resulting morphologic and cellular changes.
Prerequisite: BMS 300 or BMS 360.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 611  Cancer Genetics  Credits: 2 (2-0-0)
Course Description: Role of genetic background in determining individual susceptibility to cancer.
Prerequisite: EZ 350 or MIP 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 630  Radiological Physics and Dosimetry II  Credits: 3 (3-0-0)
Course Description: Calculations and measurement techniques for dosimetry shielding and protection from ionizing radiations.
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 632  Techniques in Radiation Dosimetry  Credit: 1 (0-3-0)
Course Description: Techniques for determining the absorbed dose in tissue from ionizing radiations.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 633  Radiation Detection Methods in Radiobiology  Credit: 1 (0-3-0)
Course Description: Detection and measurement of ionizing radiation appropriate for radiobiologists.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 636 Industrial Hygiene Control Methods Credits: 3 (3-0-0)
Course Description: Controlling occupational exposures to chemical agents, emphasizing local exhaust ventilation; personal protective devices.
Prerequisites: ERHS 526 and ERHS 536, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 637 Environment, Safety, and Health Management Credits: 3 (3-0-0)
Course Description: Environment, safety, and health management systems for occupational health practitioners; major environmental and DOT regulatory standards and laws.
Prerequisite: ERHS 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 640 Advanced Epidemiology Credits: 3 (3-0-0)
Course Description: In-depth exploration of advanced epidemiologic methods.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 642 Applied Logistic Regression Credits: 3 (3-0-0)
Course Description: Basic and advanced concepts of logistic regression with focus on practical applications in epidemiology using SAS.
Prerequisites: ERHS 532 and ERHS 542.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 656 Occupational Noise Control Credits: 3 (3-0-0)
Course Description: Measurement and control of industrial or environmental noise emphasizing practical solutions.
Prerequisite: ERHS 527.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 658 Environmental/Occupational Epidemiology Credits: 3 (2-0-1)
Course Description: Epidemiologic analyses of effects of exposure to environmental and occupational health hazards.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 665 Radiochemistry Credits: 3 (2-3-0)
Course Description: Radionuclide separation and measurement and radiotracer applications in physical and biological systems.
Prerequisites: (CHEM 114 and MATH 155) and (ERHS 530, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 670 Directed Readings Credits: Var[1-3]
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 671 Experimental Radioecology Credit: 1 (0-3-0)
Course Description: Experimental techniques used in radioecological and environmental radioactivity studies.
Prerequisites: (ERHS 400 or ERHS 532) and (ERHS 570).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 675 Environmental Health Regulatory Compliance Credits: 3 (3-0-0)
Course Description: Requirements and strategies for meeting obligations under regulations and laws involved in environmental and occupational health protection.
Prerequisite: None.
Registration Information: 15 credits of ERHS courses 500-level or above or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 679 Occ Env Health Interdisciplinary Symposium Credits: 2 (0-0-2)
Course Description: Evaluation of occupational and environmental health issues, through multidisciplinary interactions in seminars and field visits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in a graduate program related to occupational, environmental, or public health. May be repeated for credit. Required field trips.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 684 Supervised College Teaching Credits: Var[1-3]
Course Description: Participation in environmental health course teachings under guidance of faculty in classroom, laboratory, or field.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 687  Internship  Credits: Var[1-6]
Course Description: Advanced study or research in environmental health with a governmental agency, private sector entity, or research facility.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 692 Seminar  Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693A Research Seminar: Epidemiology  Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693B Research Seminar: Industrial Hygiene  Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693C Research Seminar: Toxicology  Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693D Research Seminar: Health Physics  Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: S/U Sat/Unsat Only.

ERHS 695A Independent Study: Epidemiology  Credits: Var[1-18]
Course Description: Specialized study in epidemiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695B Independent Study: Occupational and Environmental Health  Credits: Var[1-18]
Course Description: Specialized study in occupational and environmental health under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695C Independent Study: Toxicology  Credits: Var[1-18]
Course Description: Specialized study in toxicology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695D Independent Study: Radiation Chemistry  Credits: Var[1-18]
Course Description: Specialized study in radiation chemistry under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695E Independent Study: Radiation Ecology  Credits: Var[1-18]
Course Description: Specialized study in radiation ecology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695F Independent Study: Cancer Biology  Credits: Var[1-18]
Course Description: Specialized study in cancer biology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695G Independent Study: Health Physics  Credits: Var[1-18]
Course Description: Specialized study in health physics under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 695H Independent Study: Exposure Assessment Credits: Var[1-18]
Course Description: Specialized study in exposure assessment under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695I Independent Study: Small Animal Radiology Credits: Var[1-18]
Course Description: Specialized study in small animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695J Independent Study: Large Animal Radiology Credits: Var[1-18]
Course Description: Specialized study in large animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695K Independent Study: Special Techniques in Radiology Credits: Var[1-18]
Course Description: Specialized study in special techniques in radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695L Independent Study: Radiation Therapy Credits: Var[1-18]
Course Description: Specialized study in radiation therapy under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695M Independent Study: Computed Tomography Credits: Var[1-18]
Course Description: Specialized study in computed tomography under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695N Independent Study: Magnetic Resonance Imaging Credits: Var[1-18]
Course Description: Specialized study in magnetic resonance imaging under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695O Independent Study: Ultrasound Credits: Var[1-18]
Course Description: Specialized study in ultrasound under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695P Independent Study: Nuclear Medicine Credits: Var[1-18]
Course Description: Specialized study in nuclear medicine under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696A Group Study: Epidemiology Credits: Var[1-3]
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696B Group Study: Industrial Hygiene Credits: Var[1-3]
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696C Group Study: Toxicology Credits: Var[1-3]
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696D Group Study: Health Physics Credits: Var[1-3]
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 698  Research  Credits: Var[1-6]  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Written consent of research mentor.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

ERHS 699  Thesis  Credits: Var[1-18]  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

ERHS 701  Advanced Diagnostic Imaging Modalities  Credits: 4 (4-0-0)  
Course Description: Interpretation/applications of advanced imaging methods including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.  
Prerequisite: VM 786A or VM 786B.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 711  Advanced Radiographic Interpretation  Credits: Var[1-4]  
Course Description: Radiographic interpretation of disease processes of all major systems in large and small animals.  
Prerequisite: VM 786A or VM 786B.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 712  Physics of Diagnostic Imaging  Credits: 3 (3-0-0)  
Course Description: Physics of imaging for radiology, ultrasound, computerized tomography, magnetic resonance, and nuclear medicine.  
Prerequisite: None.  
Registration Information: DVM or equivalent professional veterinary medicine degree required.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 714  Radiation Therapy Physics  Credits: 3 (3-0-0)  
Course Description: Radiation therapy physics, photon and electron production for therapeutic use, teletherapy, brachytherapy, radiation protection and quality assurance.  
Prerequisite: None.  
Registration Information: DVM or health physics, physics, or engineering graduate student.  
Term Offered: Fall (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 721  Radiation Oncology  Credits: Var[1-3]  
Course Description: Management of spontaneous and experimental tumors with emphasis on radiation therapy.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 726  Aerosols and Environmental Health  Credits: 3 (3-0-0)  
Course Description: Properties and behavior of environmental and occupational aerosols emphasizing how airborne particles affect health of humans and the environment.  
Prerequisite: PH 141.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 733  Environmental Carcinogenesis  Credits: 3 (3-0-0)  
Course Description: Molecular and cellular mechanisms by which environmental carcinogens exert effects.  
Prerequisite: BC 403.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 751  Advanced Radiation Biology I  Credits: 3 (3-0-0)  
Course Description: Molecular and cellular mechanisms of radiation damage and repair; mammalian radiation genetics.  
Prerequisite: ERHS 550.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 753  Advanced Radiation Biology II  Credits: 3 (3-0-0)  
Course Description: Perturbations in cell cycle and cell population growth kinetics by radiation; radiation effects on normal tissues; radiation oncogenesis.  
Prerequisite: ERHS 550.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ERHS 765  Environmental Contaminant Modeling II  Credit: 1 (0-3-0)  
Course Description: Development and analysis of advanced computer models for radionuclide and chemical transport in aquatic and terrestrial ecosystems.  
Prerequisites: ERHS 563 and ERHS 570.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.
ERHS 770  Radiation Biology Basic to Tumor Therapy  Credit: 1 (0-0-1)
Course Description: Current aspects of radiation biology pertinent to improvements in radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 784  Supervised College Teaching  Credits: Var[1-3]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 786  Practicum  Credits: Var[1-18]
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 787  Internship  Credits: Var[1-6]
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 792  Seminar  Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795A  Independent Study: Epidemiology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795B  Independent Study: Occupational and Environmental Health  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795C  Independent Study: Toxicology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795D  Independent Study: Radiation Chemistry  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795E  Independent Study: Radiation Ecology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795F  Independent Study: Cancer Biology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795G  Independent Study: Health Physics  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795H  Independent Study: Exposure Assessment  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795I  Independent Study: Small Animal Radiology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 795J  Independent Study: Large Animal Radiology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795K  Independent Study: Special Techniques in Radiology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795L  Independent Study: Radiation Therapy  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795M  Independent Study: Computed Tomography  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795N  Independent Study: Magnetic Resonance Imaging  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795O  Independent Study: Ultrasound  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795P  Independent Study: Nuclear Medicine  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 796  Group Study  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 799  Dissertation  Credits: Var[1-18]
Course Description: Doctoral-level research and preparation of dissertation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.