DEPARTMENT OF MEDICAL LABORATORY AND RADIATION SCIENCES

http://www.uvm.edu/~cnhs/mlrs/

Students in the Department of Medical Laboratory and Radiation Sciences study and work at the intersection of human health, medicine, and technology. Programs offered lead to Bachelor of Science degrees in Medical Laboratory Science, Medical Radiation Sciences and an online degree in Health Sciences.

The B.S. in Medical Laboratory Science offers two concentrations: Clinical Laboratory Science or Public Health Laboratory Science.

The B.S. in Medical Radiation Science offers two concentrations: a clinical track in Radiation Therapy and a non-clinical track focused on general radiation science.

The B.S. in Health Sciences is an online program and offered as an option for students who have previously earned at least one year of college credit (30 credit hours).

All programs offer an integrated curriculum, with courses in the humanities, basic, health and medical sciences, and direct hands-on experience through clinical practica, research or field work. Students have the opportunity to interact with faculty from the department and throughout the university, including the College of Medicine. Graduates of all three programs are prepared for immediate employment in the healthcare arena, or graduate study.

Requirements for admission are the same as the general university requirements, with the addition that applicants must have taken high school biology, mathematics through trigonometry or precalculus, and chemistry; physics is highly recommended.

MAJORS

MEDICAL LABORATORY AND RADIATION SCIENCES MAJORS

Health Sciences B.S.

Medical Laboratory Science B.S.

Medical Radiation Sciences B.S.

Health Sciences Courses

HSCI 090. Internship. 1-3 Credits.
An on-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

HSCI 096. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

HSCI 101. Issues in Cont. Public Health. 3 Credits.
Introductory investigation of public health. Explores the development and scope of the discipline of public health and issues that have been raised with regard to the practice of public health.

HSCI 102. Epidemics in Hist & Imaginatn. 3 Credits.
Explores epidemic disease through the lens of history and fiction. Students will learn about what makes a disease epidemic or pandemic, how the causes of disease have been discovered, and interventions to stop the spread of disease.

HSCI 130. Health Promotion. 3 Credits.
An overview of health promotion across the lifespan, from local, national and global perspectives. Examination of the influences on health and risk, strategies to promote health, and evaluation of outcomes. Students will engage in 8-10 hours of service learning.

HSCI 140. Struct & Finan of US Hlthcare. 3 Credits.
Organization and financing of the U.S. health care system; discussion of current issues in health reform.

HSCI 190. Internship. 1-18 Credits.
An on-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

HSCI 192. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

HSCI 195. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

HSCI 197. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

HSCI 198. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

HSCI 290. Internship. 1-18 Credits.
An on-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

HSCI 292. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

HSCI 295. Special Topics. 1-18 Credits.
See Schedule of Course for specific title.
HSCI 297. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

HSCI 298. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

Medical Lab Radiation Sci Courses
MLRS 034. Human Cell Biology. 0 or 4 Credits.
Lecture and laboratory experiences about molecular and cellular structure, function and physiology using human cells as the model.

MLRS 054. Principles of Microbiology. 3 Credits.
Lectures dealing with the structure, physiology, and control of microorganisms, in particular those of medical importance.

MLRS 056. Principles of Microbiology Lab. 1 Credit.
Laboratory experiences dealing with the structure, physiology, and control of microorganisms, particularly those of medical importance. Prerequisite: MLRS 054.

MLRS 090. Internship. 1-3 Credits.
An on-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

MLRS 095. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

MLRS 096. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

MLRS 110. Phlebotomy. 1 Credit.
Basic techniques in blood collection in outpatient phlebotomy and advanced techniques in inpatient phlebotomy, including choice of anticoagulants, equipment, sterility, and protection from blood-borne pathogens. Prerequisites: MLS and MLS-PBC students only.

MLRS 140. Radiation Science. 3 Credits.
Introduction to ionizing radiation, emphasizing its interaction with matter, its effect on the human body, and methods of radiation protection.

MLRS 141. Advanced Radiation Science. 3 Credits.
Lecture and laboratory experiences to enhance the understanding and application of the principles of radioactive decay, radiation exposure, absorbed dose, shielding and detection of radiation. Prerequisite: MATH 009, MATH 010, MATH 019 or MATH 021.

MLRS 175. Medical Imaging. 3 Credits.
Introduction to the radiographic anatomy and the various imaging modalities presently used to include diagnostic imaging, computed tomography (CT), magnetic resonance imaging (MRI), and nuclear medicine. Prerequisites: MLRS 141, RADT 152, and ANPS 020.

MLRS 176. Medical Imaging Lab. 1 Credit.
Laboratory experiences in diagnostic imaging, which occurs outside the traditional classroom/laboratory setting? under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

MLRS 188. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

MLRS 190. Internship. 1-18 Credits.
An on-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

MLRS 193. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

MLRS 195. Intermediate Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

MLRS 196. Intermediate Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

MLRS 198. Undergraduate Research. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting? under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

MLRS 215. CT Procedures. 3 Credits.
This course provides in-depth study of the concepts, use and practice of CT Procedures related to Nuclear Medicine Technology and Radiation Therapy. Prerequisites: ANPS 019 and ANPS 020, MLRS 175.

MLRS 242. Immunology. 3 Credits.
Deals with cells, organs, development, interactions and the functioning (infectious process, immunodeficiency, hypersensitivity reactions, transplantation and tumor immunology) of the innate and the adaptive immune system. Prerequisites: One semester of biochemistry, one semester of organic chemistry.

MLRS 244. Immunology Lab. 1 Credit.
Laboratory experience dealing with cellular and humoral immunity, B cells and T cells, autoimmunity, immunodeficiency. Laboratory covers immunological techniques and applications. Co-requisites: MLRS 242 or MMG 223.

MLRS 281. Applied Molecular Biology. 3 Credits.
Introduces students to the nucleic acid and protein-based molecular diagnostics technology through class presentation, reading, and discussions. Focuses on diagnostic applications for understanding molecular mechanisms of disease. Prerequisite: CHEM 042 or CHEM 141.

MLRS 282. Applied Molecular Biology Lab. 1 Credit.
Laboratory experiences include practical concepts of molecular applications. Introduces basic methods used in DNA and Protein technology including plasmid isolation, polymerase chain reaction, restriction enzyme use, and related assays. Prerequisite: CHEM 042 or CHEM 141. Co-requisite: MLRS 281.
MLRS 288. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

MLRS 290. Internship. 1-18 Credits.
An on-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

MLRS 293. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion. Prerequisite: Department permission.

MLRS 294. Undergraduate Research II. 1-6 Credits.
Individual research performed under the supervision of a faculty mentor. A written report and seminar is required. Prerequisite: MLRS 293, Department permission.

MLRS 295. Prin of Education & Management. 3 Credits.
Introduction to educational practices, management strategies, and professionalism. Third year standing, Medical Laboratory Science, Nuclear Medicine Technology, Radiation Therapy majors only.

MLRS 296. Leadership & Mgt in Hlth Care. 3 Credits.
This course will familiarize students with operational aspects of healthcare management, including but not limited to process improvement, budgeting, team building and information management. Prerequisites: NLS, NMT, RADT majors only; 3rd or 4th year cohort standing.

MLRS 297. Leadership & Mgt in Hlth Care. 3 Credits.
Familiarizes students with operational aspects of health care management, leadership and policy. Explores current techniques in process improvement, management methodologies, and healthcare policy with a special focus on disparities in health and healthcare. Prerequisites: Minimum Junior standing; College of Nursing and Health Sciences majors.

MLRS 298. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting? under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

MLRS 299. Advanced Special Topics. 1-18 Credits.
Courses or seminars beyond scope of existing departmental offerings. Prerequisite: Department permission.