HUMAN ONCOLOGY (H ONCOL)

H ONCOL/MED PHYS 410 – RADIOBIOLOGY
2-3 credits.

Effects of ionizing radiations of living cells and organisms, including physical, chemical, and physiological bases of radiation cytotoxicity, mutagenicity, and carcinogenesis; lecture and lab.
Requisites: Graduate/professional standing or (PHYSICS 202 or 208 and ZOOLOGY/BIOLOGY/BOTANY 152 or 153)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2022

H ONCOL/B M E/MED PHYS/PHYSICS 501 – RADIATION PHYSICS AND DOSIMETRY
3 credits.

Interactions and energy deposition by ionizing radiation in matter; concepts, quantities and units in radiological physics; principles and methods of radiation dosimetry.
Requisites: (PHYSICS 323, 449 and MATH 320) or graduate/professional standing
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2022

H ONCOL 681 – SENIOR HONORS THESIS IN HUMAN ONCOLOGY 1
3-4 credits.

Independent research in the area of human oncology including biology, medical physics, or clinical oncology. A written thesis is required in the final semester.
Requisites: Consent of instructor
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: No
Last Taught: Fall 2021

H ONCOL 682 – SENIOR HONORS THESIS IN HUMAN ONCOLOGY 2
3-4 credits.

Independent research in the area of human oncology including biology, medical physics, or clinical oncology. A written thesis is required in the final semester.
Requisites: Consent of instructor
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: No
Last Taught: Spring 2022

H ONCOL 691 – SENIOR THESIS IN HUMAN ONCOLOGY 1
3-4 credits.

Independent research in the area of human oncology including biology, medical physics, or clinical oncology. A written thesis is required in the final semester.
Requisites: Consent of instructor
Repeatable for Credit: No
Last Taught: Fall 2021

H ONCOL 692 – SENIOR THESIS IN HUMAN ONCOLOGY 2
3-4 credits.

Independent research in the area of human oncology including biology, medical physics, or clinical oncology. A written thesis is required in the final semester.
Requisites: Consent of instructor
Repeatable for Credit: No
Last Taught: Spring 2022

H ONCOL 699 – INDEPENDENT STUDY IN HUMAN CANCER BIOLOGY
1-3 credits.

Tutorial lab/library research and study. Opportunity for learning in depth without a thesis requirement.
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2023

H ONCOL 750 – MULTI-DISCIPLINARY PATIENT-ORIENTED RESEARCH PRESENTATION SKILLS SEMINAR
1 credit.

Learn to value the contributions of oral presentations in developing your career, in convincing audiences of the results of your research, or gaining approval of your proposed research.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2022

H ONCOL 910 – INDEPENDENT READING AND RESEARCH FOR FOURTH YEAR MEDICAL STUDENTS
2-8 credits.

Independent research under the direct supervision of Human Oncology faculty. Each student's research project is individualized to meet student research goals within context of faculty research needs.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2023

H ONCOL 911 – TUMOR IMMUNOLOGY AND CANCER IMMUNOTHERAPY
2 credits.

Gain a greater understanding of the basic and translational science that is fueling the ongoing immuno-oncology revolution in cancer care. Explore the tumor-immune microenvironment and modern approaches to cancer immunotherapy. Evaluate pertinent primary literature in this arena and exposure to the technological resources (e.g. flow cytometry, clinical pathology, cell therapeutics infrastructure) that are critical to implementing immunotherapies in the clinic. Tumor board attendance will highlight the clinical reasoning and toxicity management in the clinical use of immunotherapies for cancer treatment.
Requisites: MED SC-M 810, 811, 812, and 813
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2023

H ONCOL 912 – CHALLENGES IN ONCOLOGY: APPLICATION OF MODERN BIOLOGY AND TECHNOLOGY TO CLINICAL CANCER CARE
2 credits.

Radiation therapy has been used in treatment of cancer and other diseases for over 100 years. Gain a comprehensive overview of how modern technology allows us to precisely target the tumor while maintaining the function of normal tissues (i.e. the physics and biology underlying the use of radiation therapy). Develop a strong foundational knowledge of basic oncology principles, begin to understand the biology and physics underlying radiation oncology treatments, interpret dose/volume histograms and normal-tissue complication probabilities, understand the role of modern imaging in the workup, treatment, and follow-up of cancer patients, and be able to discuss the major financial issues associated with various treatment modalities. It is anticipated that students will incorporate these concepts, knowledge, experiences, and evidence in their future clinical practice.
Requisites: MED SC-M 810, 811, 812, and 813
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2023

H ONCOL 922 – RADIATION ONCOLOGY
2-4 credits.

Oncology-focused topics including staging, prognosis, and treatment approaches to different cancers. Different radiation modalities, treatment machines, and treatment planning. Opportunity to see patients in clinic and observe procedures (brachytherapy), under direct supervision by residents and attending physicians.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2023

H ONCOL 990 – RESEARCH IN HUMAN CANCER BIOLOGY
1-12 credits.

Graduate thesis research.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Summer 2023