

INTD 630 Viral Oncology

Units: 2

Fall – Wednesdays-9:30 – 11:30 am

Location: HMR 202, 2011 Zonal Avenue, Los Angeles, CA.

Instructor: Dr. Suraiya Rasheed

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Course Information-INTD 631-Viral Oncology: This Course is a graduate--level course offered at the Health Science Campus during the fall semester. The Course is divided into 14 sessions and each session will focus on a specific virus and diseases associated with that virus/family followed by student presentation and final examination.

Session 1: Most students do not have any scientific background on viruses. The first session will therefore focus on general introduction to different families of viruses, the structure, function and physical and biochemical properties of viruses that have been associated with human cancers. Each student will be provided with detailed schedule of the course and a list of specific books, chapters and special references on cancer-causing viruses for reading. Specific PowerPoint slides will be posted for each virus and the disease/s caused by it.

Session 2: This session will be dedicated to general diagnostic methods and isolation of viruses from body fluids and tissues. However, since the bulk of naturally occurring pathogenic or non-pathogenic viruses present in our environment cannot be identified by the conventional tests conducted in various clinical virology laboratories, a major emphasis would be on the use of modern genomics, proteomics and bioinformatics technologies to identify novel viruses.

Session 3: This session will deal with virus-host-cell interactions with particular emphasis on the discovery of cancer-causing genes (Oncogenes) by viruses in the chicken, mouse, rat and monkey model systems which led to the technologies for the isolation and characterization of human oncogenes.

Sessions 4-11: Each session will focus on a particular human virus that has been associated with specific cancer/s and other diseases.

Sessions 12- 13: Review oncogenic/pathogenic mechanisms of RNA-containing viruses and DNA-containing viruses

Session 14: Open session for Questions and Answers

Session 15: Student-class presentations and term-paper

Session 16: Final Examination

Course Goals:

This course will provide advanced knowledge and an in-depth understanding of a wide range of cancers caused by different DNA and RNA viruses. While many viruses such as the human immunodeficiency viruses (HIV) have not been considered as "Cancer-causing viruses", this course will discuss multiple molecular mechanisms by which viruses such as HIV can cause different types of tumors with a higher frequency than in the general population groups that are not infected with HIV. Thus, a main goal of Viral Oncology course is to focus on the complexities of cellular and molecular interactions that influence health and disease. This course will also discuss the latest /on-going research on environmental triggers that can activate Endogenous viruses and other DNA-elements that lead to complex molecular interactions involved in the development of various human and animal cancers. Another goal of this graduate course is to train students in paper-writing and presentation skills. Therefore, at the end of the course-review and before the final examination, all students are required to write an essay on any topic related to viruses or cancer that has not been discussed in the class. All students are required to make a PowerPoint presentation and participate in the question & answer session.

Course Correspondence:

All correspondence between instructors and students will be made using email. All information regarding lectures, readings, assignments, and homework will be posted on the Blackboard web site for INTD 630.**Required Readings and Supplementary Materials**

Required reading list are provided to all students at the first session and specific readings are posted on the blackboard with Power Point slides

Description and Assessment of Assignments

- 1) Term-paper and class presentation: All students present a term-paper on a specific topic of *their choice* that has not been covered in the class but the topic is related to viral diseases or the biology, molecular biology, immunology and therapeutic interventions of specific cancers.
- 2) Class presentation is a week before the final exam. All students participate in the discussion. Students are assessed on the verbal reasoning basis of their understanding and presentation of the topic (10 points for the paper and 10 points for the presentation)
- 3) Finals are based on a written exam and essay-type answers to questions;

Assignment Submission Policy

1. A term paper on specific topic of Viral Oncology that has not been covered in the class
2. Class presentation (Power Points),followed by discussion

All Assignments are submitted one week before the final examination

Grading Breakdown

Assignment	Points	% of grades
Term paper	10	10
Class presentation	10	10
Final exam	80	80
Total	100	

Additional Policies

Students are expected to attend all classes. If the classes are missed, then students should study from the power points that are posted on the blackboard. The professor is always available to explain or answer any questions students may have.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu> describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for

international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

SCHEDULE OF LECTURES AND EXAMS
August 23 – December 13, 2017

On the first day of the Introductory lecture, all students are provided with a detailed Course Calendar, a thorough list of deliverables—readings, assignments, examinations, etc., broken down on a weekly basis (See the List of courses and the deliverables in the Table below)

	Topics/Daily Activities	Readings and Homework	Deliverable/ Due Dates
Week 1 Aug. 23	Introduction to Viral Oncology. Historical Perspectives in Viral Diseases, Virus Nomenclature, Genetic Structure, Classification, Morphology, Replication and General Properties of Retroviruses; Endogenous vs. Exogenous Retroviruses;	A list of books, reviews and chapters on cancer and viruses is provided for additional reading Supplementary handouts are provided whenever necessary	All students are oriented on the first day about the requirements and mode of exam: 1.required to write an essay on a relevant topic related to Viral Oncology that may not have been covered in the class AND 2. class presentation one week before the final written exam
Week 2 Aug. 30	Methods of Virus Detection, Pathogenic vs. Non-pathogenic Viruses Acute v/s Chronic Retrovirus infections and diseases (Leukemia/ <i>in vitro</i> and <i>in vivo</i> Model Systems ALV, MuLV,;	Power Point slides	
Week 3 Sept. 6	Retroviral Oncogenes, Mechanisms of Oncogene Transduction (Animal Models (Chicken, Mouse, Rat, Cat, Monkey); <i>in vitro</i> and <i>in vivo</i> Models; ASV, MMTV MSV, RASV, SSV	Power Point slides	
Week 4 Sept. 13	Human Retroviruses associated with Cancers; Human T-Cell Leukemia Virus (HTLV); Mechanisms of Oncogenesis	Power Point slides	
Week 5 Sept.20	Human Immunodeficiency Virus (HIV): Genetic Diversity, Recombination; AIDS related Cancers -I	Power Point slides	
Week 6	Human Immunodeficiency	Power Point slides	

Sept. 27	Virus (HIV): Genetic Diversity, Recombination; HIV-associated non-AIDS diseases and Cancers -11		
Week 7 Oct. 4	Cancers associated with Hepatitis B and D Viruses (HBV,HDV)	Power Point slides	
Week 8 Oct. 11	Hepatitis C Virus (HCV)-associated cancers	Power Point slides	
Week 9 Oct. 18	Human papilloma and Polyoma Virus-associated cancers	Power Point slides	
Week 10 Oct. 25	Herpesviruses (HSV, EBV and HHV-8) – associated malignancies	Power Point slides	
Week 11 Nov. 1	Review RNA-Viral Pathogenesis & Mechanisms of Oncogenesis – I	Power Point slides	
Week 12 Nov. 8	Review DNA-Viral Pathogenesis & molecular Mechanisms of Oncogenesis -II	Power Point slides	
Week 13 Nov. 15	Stem Cell Cancers – Mechanisms of Oncogenesis - IV	Power Point slides	
Week 14 Nov.22	No Class – Due to Thanksgiving Holiday		
Week 15 Nov. 29	Review: Mechanisms of Viral Oncogenesis IV- Q & A Session	Power Point slides	
Dec. 6	Student's Presentation		
Week16 FINAL Dec. 13	FINAL EXAMINATION		