

TSCI 6105
Topics In Cancer
Prevention

Fall 2023

CLASS DAYS and TIME: Fridays – 11:00 AM to 12:00PM

CLASSROOM: AL&TC Building Room 2.211

COURSE FACULTY: Addanki Pratap Kumar, Ph.D.

OFFICE LOCATION and HOURS: STRF 2.233, Fridays 9-10:30AM

EMAIL: kumara3@uthscsa.edu

TELEPHONE: 210-562-4116

COURSE DESCRIPTION AND OBJECTIVES

This course address current topics in cancer prevention science through a series of didactic lectures and discussions with cancer prevention faculty. Topics span the continuum of cancer prevention from basic cancer epidemiology and carcinogenesis, to cancers of special relevance in South Texas and interventions. An exposure to prevention clinical trials and disparity research will also be presented. Consent of instructor is required for registration.

Pre-requisites – None

Semester credit hours – 1 Credit hour

By the end of this course, each student should be able to:

- Have a thorough understanding of the discipline of cancer prevention
- Have an introduction to cancer epidemiology.
- Understand what the causes and prevention of common cancers.
- Have an introduction to prevention strategies.
- Understand cancer disparities, outcome research, and prevention clinical trials.

COURSE ORGANIZATION

The main teaching modalities used in this course include:

- 1) Didactic lectures and discussions

Materials – Two textbooks will be made available as pdfs to enrolled students

Computer Access – Students are required to have a laptop computer that can connect to and operate over a wireless network.

Software required:

- Microsoft Office Suite (A personal copy of the latest version can be purchased at The UTHSCSA bookstore at student pricing with a student ID)

Laptops with an Apple based Operating System must be able to also operate using a Windows based Operating System. It may be necessary to purchase Windows (student pricing available at The UTHSCSA bookstore with a student ID) and virtualization software.

All laptops will connect to The UTHSCSA network via the HSCwave broadcast wireless connection. Authentication for wireless use is based on The UTHSCSA domain username and password.

Verification of proper operation **prior** to the start of class is highly recommended.

Assistance is available thru the IMS Service Desk

- Telephone: 567-7777
- E-mail (ims-servicedesk@uthscsa.edu)

Assistance is also available at the IMS Student Support Center (ALTC 106).

Reading Assignments – Individual lectures will have reading assignments

ATTENDANCE

- Attendance is defined as being present within 15 minutes after the scheduled beginning of class and leaving no earlier than 15 minutes before the scheduled ending of class.
- Excused absences may be granted by the Course Director at his or her discretion along with any make-up assignments.
- A written request (e-mail is accepted) is required in advance of any absence and all written requests must include the date of the absence and the details regarding the circumstances of the absence.
 - Seminar and conference attendance should be discussed with course directors prior to enrolling in a course so that the course director can advise as to whether to enroll or not to enroll.
 - If you have already enrolled in the course the course director can advise that you drop the course based on the number of absences associated with the seminar(s) and/or conference(s) you will be attending.
- It is up to the individual course directors as to whether they will accept a reason for an absence as excused.
- Course directors may have a course attendance policy that will only allow 1 absence (excused or not) per semester.
- Students requesting an excused absence for religious observance of holidays should follow the guidelines outlined in the UT Health Science Center Catalog.
- Should you have any questions regarding attendance requirements for any course, please contact the course director.

TEXTBOOKS

Required:

- 1) Fundamentals of Cancer Prevention, David S. Alberts, Lisa M. Hess (Eds), 2d edition Springer 2008
- 2) Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective World Cancer Research Fund

Recommended: None

GRADING POLICIES AND EXAMINATION PROCEDURES

Grading System

The scale below may be used to grade exams: however, the course is graded as Satisfactory (S)/Unsatisfactory (U)

A = 90-100% B = 80-89% C = 70-79% F = < 69%

REQUESTS FOR ACCOMMODATIONS FOR DISABILITIES

In accordance with policy 4.2.3, **Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA)**, any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100). to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at <http://uthscsa.edu/eo/request.asp>.

ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at <http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/>

The values and ethics of the GSBS and UT Health San Antonio are based upon honesty, integrity, and mutual respect between all students, staff, and faculty. These values and ethics are applied to all endeavors that are related to activities performed by all members of the GSBS community. This includes any assignments, presentations, projects, and/or exams completed in this course. All students commit to not receiving or giving any aid on the completion of their work in this course including the use of Artificial Intelligence text generators such as ChatGPT. If you are unsure how this might pertain to this course, please contact the course director before submission of any assigned work.

TITLE IX AT UTHSCSA

Title IX Defined:

Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads “no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.”

University of Texas Health Science Center San Antonio’s Commitment:

University of Texas Health Science Center San Antonio (UTHSCSA) is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UTHSCSA does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at <http://students.uthscsa.edu/titleix/>

EMAIL POLICY

All correspondence with the student will be achieved only through their student “LiveMail” e-mail address, CANVAS, and the course director UTHSCSA e-mail address as listed above.

USE OF RECORDING DEVICES

Recording of any activities in this course by any means, *e.g.*, video, audio, etc., is not permitted unless approved by the instructor or required for compliance with the American with Disabilities Act (ADA).

ELECTRONIC DEVICES

Cell phones must be turned off during all class meetings and exams. Computers and electronic tablets are allowed only for participating in classroom activities (*e.g.*, viewing slides presented in lecture or conference materials). No texting, tweeting, emailing, web-surfing, gaming, or any use of electronic devices that is not directly connected with classroom activities is permitted.

FINAL CLASS SCHEDULE
TSCI 6105
Topics in Cancer Prevention
Fall 2022

WEEK	DATE	TOPIC	Assignment	Instructor and Modality
Week 1	9/01	Course Introduction and Overview		KUMAR
Week 2	9/08	Cancer Epidemiology		LEE
Week 3	9/15	Chemoprevention		WARGOVICH
Week 4	9/22	Infectious Cancers		LONG-PARMA
Week 5	9/29	Breast Cancer		KAKLAMANI
Week 6	10/06	GI Cancers		WRIGHT
Week 7	10/13	Pediatric Cancers and Genetic Screening		TOMLINSON
Week 8	10/20	Oral Cancer		GONZALES
Week 9	10/27	Cancer in Texas		CHALELA
Week 10	11/03	MID-TERM EXAM		KUMAR
Week 11	11/10	Physical Activity and cancer prevention		TBD
Week 12	11/17	PRIMARY CARE AND CANCER PREVENTION EFFORTS		SIDHU
Week	11/24	THANKSGIVING-NO CLASS		
Week 13	12/01	Skin cancer prevention		GHOSH
Week 14	12/08	Methods in machine learning in genomic applications		CHEN
Week 15	12/15	Ethics in Cancer Prevention		MORROW
Week 16	12/22	FINAL EXAM		KUMAR

TOPICS IN CANCER PREVENTION

Lesson Objectives for Individual Sessions

The Lesson Objectives listed below are to be used as a guide to the most essential questions that you should consider in your studies. However, do not view these lists as the “end-all” as you devise your study strategies. Anything covered in reading assignments, online activities, or discussed in class is to be considered “testable”.

WEEK	TOPIC	Lesson Objectives
1	Introduction and Overview	<p>Cancer prevention is a complex discipline ranging from basic Laboratory research through clinical trials. An overview of the course will be presented and expectations set. In addition, the The basic aspects of carcinogenesis will be presented.</p> <p>Learning Objectives and Competencies– Participants will be able to understand:</p> <ol style="list-style-type: none">1. Have a global understanding of history of carcinogenesis, causes of cancer2. Recognize the signs and symptoms of cancer3. Become familiar with most common cancers.4. Understand present cancer trends and future risks5. Carcinogenic factors6. Genes involved in carcinogenesis7. Gene-environment interactions8. Cancer prevention and carcinogenesis.9. Overview of course.
2	Cancer Epidemiology	<p>Cancer epidemiology sets the framework for intervention trials in humans.</p> <p>Learning Objectives and Competencies- Participants will be able to:</p> <ol style="list-style-type: none">1. Understand the history and development of cancer epidemiology2. Recognize and interpret the most common statistical methods used in cancer epidemiology3. Identify tools to understand and describe trends and variation in cancer burden4. Describe future trends in cancer epidemiology research and collaboration

3	Chemoprevention	<p>Chemoprevention is a strategy for intervening on cancer early to prevent primary cancer or recurrent cancer. Natural products and drugs will be highlighted as illustrations.</p> <p>Learning Objectives and Competencies– Participants will be able to understand:</p> <ol style="list-style-type: none"> 1. History of Chemoprevention 2. Types of Agents 3. Chemoprevention Drug Development
4	Infectious Cancers	<p>The lecture will focus on hepatocellular carcinoma and gastric cancers; infectious influences on these cancers and strategies/challenges for their prevention.</p> <p>Learning Objectives and Competencies– Participants will be able to:</p> <ol style="list-style-type: none"> 1. Have a general understanding of Hepatocellular Carcinoma (HCC) and Gastric Cancer (GC) burden of disease in the U.S. 2. Become familiar with specific infectious causes of HCC and GC: Hepatitis B and C (HBV/HCV), <i>Helicobacter pylori</i> and other contributing risk factors (lifestyle/environment) 3. Describe current strategies targeting HBV/HCV for HCC prevention 4. Describe challenges in GC prevention strategies that target <i>H. pylori</i> in the U.S.
5	Breast Cancer	<p>Breast cancer is a major cancer affecting women. The types of breast cancer, their etiologies, and clinical course will be discussed</p> <p>Learning Objectives and Competencies– Participants will be able to understand:</p> <ol style="list-style-type: none"> 1. Risks for developing breast cancer 2. Preventing breast cancer through chemoprevention 3. Surgical approaches to breast cancer prevention
6	Pediatric Cancers/Genetic Screening	<p>Pediatric cancer has been a success story for some types of childhood cancers. This lecture will focus on the role of genetic testing in unraveling the etiology of childhood cancer.</p> <p>Learning Objectives and Competencies– Participants will be able to:</p> <ol style="list-style-type: none"> 1. Be familiar with Pediatric cancer predisposition syndrome for which surveillance is beneficial in enhancing cancer early detection 2. Know the familial ramifications of Li-Fraumeni Syndrome 3. Understand the process and ethical considerations of genetic testing in children.
7	GI Cancers	<p>Colorectal cancer is a common cancer in the US and is increasing across the world. The etiology and strategies for its prevention will be discussed.</p> <p>Learning Objectives and Competencies– Participants will be able to:</p>

1. To identify the difference between germline and somatic mutations in colon cancer and know the more common germline colon cancer mutations
2. To identify the common primary, secondary and tertiary prevention in colon cancer
3. To identify potential future pathways of research for colon cancer prevention

8 Oral Cancer

Oral cancer is 8th most common cancer in the US and its incidence is increasing worldwide. This lecture will focus on current strategies for prevention and treatment of this disease.

Learning Objectives and Competencies– Participants will be able to:

1. Have a general knowledge of the existence and magnitude of cancer-related health disparities experienced by South Texans.
2. Identify modifiable factors that contribute to differences in incidence, prevalence, morbidity and mortality
3. Describe prevention strategies and key areas where public health efforts should be focused.

9 Cancer in Texas

The Lone Star State has some unique aspects to its cancer burden and this lecture will focus on special risk due to health disparities in our population.

Learning Objectives and Competencies– Participants will be able to:

1. Have a general knowledge of the existence and magnitude of cancer-related health disparities experienced by South Texans.
2. Identify modifiable factors that contribute to differences in incidence, prevalence, morbidity and mortality
3. Describe prevention strategies and key areas where public health efforts should be focused.

10 Physical activity and cancer prevention

Two of the more successful intervention strategies in the area of cancer prevention have been modifying dietary habits and implementing exercise.

Learning Objectives and Competencies– Participants will be able to:

1. Have general knowledge of the benefits of physical activity and diet in cancer prevention
2. Describe the role physical activity and diet have in cancer prevention
3. Understand the role of physical activity and diet in relation to cancer survivorship and quality of life
4. Have basic understanding of the role of phytochemicals in the prevention of cancer
5. Have general knowledge of the physiological mechanisms associated with physical activity and cancer prevention

11	Primary Care and cancer prevention efforts	<p>Challenges associated with implementing successful intervention strategies in the area of cancer prevention will be discussed.</p> <p>Learning Objectives and Competencies– Participants will be able to:</p> <p>Understand the (i) challenges primary care physicians face to implement cancer screening practices, adherence to guidelines, (ii) strategies to improve screening for cancer control (transportation issues, lack of education, poverty etc), (iii) implementation of life-style strategies including nutrition and exercise for cancer prevention and (iv) regulatory hurdles etc.</p>
12	Methods in machine learning in genomic applications	<p>Application of machine learning and deep artificial intelligence in the area of cancer prevention will be discussed.</p> <p>Learning Objectives and Competencies– Participants will be able to:</p> <p>Learn about the (i) data analysis algorithms; (ii) cancer prevention applications; (iii) artificial intelligence and risks and (iv) code demonstrating convolution neural networks.</p>
13	Skin Cancer Prevention	<p>This lecture will focus on etiology of skin cancer, types of skin cancers including melanoma and non-melanoma, progression and prevention strategies.</p> <p>Learning Objectives and Competencies– Participants will be able to:</p> <p>Learn about etiological factors associated with skin cancer and progression, types of skin cancer and strategies for prevention.</p>
14	Ethics in Cancer Prevention	<p>Ethical issues in the age of genomic testing test the limits of doctors and relationship with their patients. When is a treatment ethical?</p> <p>Learning Objectives and Competencies– Participants will be able to:</p> <ol style="list-style-type: none"> 1. To be able to define Clinical Equipoise and Therapeutic Misconception