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EPID 9233 A Cancer Epidemiology CRN 19258

Yelena N. Tarasenko
Georgia Southern University, Jiann-Ping Hsu College of Public Health, ytarasenko@georgiasouthern.edu

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Georgia Southern University
Jiann-Ping Hsu College of Public Health

EPID 9233 A CRN 19258

Cancer Epidemiology (Spring 2018)

Instructor:	**Yelena N. Tarasenko, DrPH, CPH, MPH, MPA**
Office Address:	Jiann-Ping Hsu College of Public Health 501 Forest Drive, Hendricks Hall Building 303, Office 2012 Statesboro, GA 30458
Office Phone:	912.478.5057
E-Mail Address:	ytarasenko@georgiasouthern.edu
Office Hours:	email to request an appointment
In-Class Meetings:	6:30 pm – 9-30 pm every Thursday (01/08/18 – 05/04/18) CITT 3212

Course Prerequisite

Enrollment into the DrPH Epidemiology Program or permission of the instructor

Catalog Description

This course uses a combination of lecture, student discussion and independent research to review the fundamentals of cancer epidemiology including classic descriptive cancer epidemiology, basic cancer biology, etiology of common and uncommon human cancers, major and minor risk factors for cancer, screening techniques for early detection, cancer biomarkers, and current research in cancer epidemiology. Epidemiologic surveillance techniques including cancer registries and databases, international studies and intervention trials will also be covered. Study designs and epidemiologic methodology used in cancer research will be discussed throughout the course.

Required Texts

Mukherjee S. The Emperor of All Maladies: A Biography of Cancer. Simon and Schuster 2010.

Boffetta P, Boccia S, La Vecchia C. A Quick Guide to Cancer Epidemiology. Springer 2014. Journal articles.

Other Recommended (reference) epidemiology books:

Textbook of Cancer Epidemiology, 2nd or 3rd Editions, Hans-Olov Adami, David Hunter and Dimitrius Trichopoulos, Eds., Oxford Press, 2008 or 2018 additions.

Nasca PC and Pastides H. Fundamentals of Cancer Epidemiology 2nd Edition. Boston: Jones and Bartlett Publishers 2008.

Doctor of Public Health-Core
1. Demonstrate their readiness to work with communities to address public health problems.

2. Select and apply theoretically based interventions to address public health problems.
3. Apply appropriate research methods to address community health problems, particularly among rural and underserved populations.

Cross-Cutting Competencies for the DrPH Degree
1. Apply evidence-based practice, generation of practice-based evidence, and leadership positions that apply and synthesize translational and implementation science findings in governmental, non-profit, and private-sector settings as well as teaching, research, and service in academic roles at the undergraduate or graduate level.
2. Demonstrate the ability to generate products that discover, apply, and synthesize evidence from a broad range of disciplines and health-related data sources, in order to advance programs, policies, or systems addressing population health. Learning products may be created in a range of formats.
3. Demonstrate leadership in increasingly interdisciplinary, inter-professional and cross-sectoral roles and settings.
4. Develop innovative, current, and proactive approaches to adapt to the ever-changing public health systems and health care landscape.
5. Explain a core, interdisciplinary orientation toward evidence-based public health practice, leadership, policy analysis and development, evaluation methods, and translational and implementation research to generate practice-based evidence.
6. Demonstrate an ability to work in a global context, recognizing the relationships among domestic and global issues.

Epidemiology Core Competencies:
1. Evaluate the existence of public health problems in rural and urban settings, both locally and internationally.
2. Analyze data from epidemiologic investigations, studies, and surveillance, with special emphasis on the identification of health disparities and promotion of health equity.
3. Evaluate causal inferences from epidemiologic data.
4. Evaluate the validity and reliability of public health screening programs.
5. Evaluate the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
6. Synthesize principles of good ethical and legal practice pertaining to the collection, maintenance, use and dissemination of data.
7. Apply current knowledge of disease etiology for use in guiding public health practice.
8. Evaluate the effects of determinants of health on public health practice.
9. Design investigations of acute and chronic health conditions or other adverse outcomes using languages and approaches tailored to the targeted population or community.
10. Evaluate public health programs at the global, national, regional, state, local, or tribal level.
11. Recommend use of laboratory resources to support epidemiologic activities.
12. Apply principles of informatics, including data collection, processing, and analysis, in support of public health practice.
13. Communicate epidemiologic information to lay and professional audiences.
14. Evaluate the strengths and limitations of epidemiologic research findings.
15. Recommend evidence-based interventions and control measures in response to epidemiologic findings.

<u>**Course Objectives (Linked to the Concentration Competencies 3, 7, and 8)**</u>:
At the conclusion of satisfactory participation in this course, the student will be able to accomplish the following:
1. Understand each of the major types of cancer for which a proven form of cancer control is available.
2. Describe behavioral, environmental, occupational, and host related risk factors and the cancers associated with each
3. Design, conduct, interpret, and clearly communicate the result of an epidemiological investigation focusing on a specific cancer.

<u>**Instructional Methods**</u>:

This doctoral course is offered in a face-to-face format: it will meet weekly throughout the semester. Students are expected to set up an appointment with instructor and make use of the instructor's time during such meetings in addition to in-class meetings to discuss concepts or difficulties they may have.

<u>**Overview of the Content to be Covered During the Semester:**</u>

Date	Topic Assignment	Reading Assignments
1/11	Introduction to Cancer Epidemiology; Introduction to Stata Pick your Cancer for Presentations/Project Project 1 Assigned	
1/18	Cancer Surveillance Cancer Clusters & Geospacial Analysis* Goodman et al. 2012 Kuldorff et al. 1998	
1/25	Origins of Cancer (Cancer Biology)* Schottenfeld et al. 2004 Klausner 2002 **Stata: Copy datasets to thumb drives**	Emperor pp. 11-31 Emperor pp. 32-54
2/01	Genetic Epidemiology of Cancer/Biomarkers <u>Project 1 presentations</u> **Stata: Datasets and Directories**	Emperor pp. 55-79 Emperor pp. 80-104
2/08	Cancer Screening & Evaluation; overdiagnosis, PSA and mammography case studies Puliti et al. 2012 Kalager et al. 2012. Hayes et al. 2014 **Stata: Sorting and merging datasets**	Emperor pp. 107-127 Emperor pp. 128-150
2/15	Tobacco & Cancer; Lung, Esophageal and Pancreatic cancer Lee et al. 2012 Lynch et al. 2009 Kuong et al. 2016 **Stata: Creating Categorical variables**	Emperor pp. 151-170 Emperor pp. 171-190
2/22	Hormones & Cancer, breast, ovarian & endometrial cancers	Emperor pp. 193-217

Date	Topic Assignment	Reading Assignments
	Anderson et al. 2014 Collaborative Group on Epidemiological Studies of Ovarian Cancer 2015 **Stata: Univariate Analysis, Table 1**	Emperor pp. 218-234
3/01	Midterm Examination	
3/08	Occupational & Environmental Risk Factors, Radiation & Cancer; * Darby et al. 2004 Reid et al. 2011 **Stata: Bivariate Analyses**	Emperor pp. 237-257 Emperor pp. 258-285
3/15	SPRING BREAK	
3/22	Diet and Cancer Chen et al. 2015 Klein et al. 2011 Lippi et al. 2016 **Stata: Multivariable Analyses (Logistic Regression)**	Emperor pp. 286-304 Emperor pp. 305-333
3/29	Orientation to Survivorship: conducting survival analyses (Stata), COX regression, datasets* **Stata: Cox Regression**	Emperor pp. 337-356 Emperor pp. 357-369
4/05	Alcohol & Cancer De Menezes et al. 2013 Cao et al. 2015 Bagnardi 2014	Emperor pp. 370-383 Emperor pp. 384-404
4/12	Infectious Agents & Cancer; HPV & Cervical Cancer Case study Burnett-Hartman et al. 2008. Gonzalez et al. 2012	Emperor pp. 405-422 Emperor pp. 423-440
4/19	Cancer Prevention & Control Research, Comorbidities and Cancer Cancer Disparities Shikata et al. 2014 Daly and Olufunmilayo 2015 *Draft survival analysis reports due if faculty feedback is desired before final submission*	Emperor pp. 441-459 Emperor pp. 460-470
4/26	Survival Analyses Presentations. Final Reports Submitted.	

* Guest speaker (TBA)

The lecture schedule is subject to change depending on the schedules of the faculty, as well as perceived need to make the most out of the few in-class meetings. Students will be given notice in the event that a change needs to be made to the schedule.

IMPORTANT DATES

Last Day to Drop Course (without academic penalty): March 5, 2018

Project 1: Descriptive Epidemiology of Selected Cancer: Due Thursday, February 1, 2018

E-mailed to me by class time = 6:30 pm and presentation in class

Midterm Examination: March 01, 2018

Final Cancer Survivorship Paper and presentations due: Thursday, April 26, 2018, emailed to me
by class time

Summary Outline by Week

Below is a listing of the class topics by week. Please see the section in the syllabus with readings
and case studies for the weekly assignments and case studies for each of the topics below.

Date	Topic
January 11, 2018	Introduction to Cancer Epidemiology & Stata
January 18, 2018	Cancer Surveillance/ Cancer Clusters
January 25, 2018	Origins of Cancer
February 1, 2018	Genetic Epidemiology of Cancer &Biomarkers
February 8, 2018	Cancer Screening & Evaluation
February 15, 2018	Tobacco & Cancer
February 22, 2018	Hormones & Cancer
March 1, 2018	Midterm Examination
March 8, 2018	Occupational & Environmental Risk Factors
March 15, 2018	No Class: Spring Break
March 22, 2018	Diet & Cancer
March 29, 2018	Survivorship & Survival Analysis
April 5, 2018	Alcohol & Cancer
April 12, 2018	Infectious Agents & Cancer
April 19, 2018	Cancer Prevention & Control, Comorbidities & Cancer
April 26, 2018	Class Presentations

Course requirements and learner evaluation

Course grades will be based upon evaluation of the following activities:

Descriptive Epidemiology e-poster	20%
Midterm Examination	35%
Final Project	35%
Class participation (includes articles and Emperor of All Maladies discussions)	10%

Final grades will be will be assigned as follows: A = 100-90; B = 89-80; C = 79-70; E/Fail = 70%
and below.

There will be no assignments to earn extra points. Samples of your work may be
reproduced including, but not limited to, inclusion in the professor's teaching portfolio.
You have the right to review anything selected for use, and subsequently ask for its
removal.

Grade Appeals and Questions: Questions about grades, including requests to revise a grade, will only be considered if submitted in writing in a form of a Memo addressed to me. Such memos will be reviewed only if submitted within 72 hours after the grade in question has been posted. See examples of Memos at https://owl.english.purdue.edu/owl/resource/590/04/. Each Memo should have To, From, Date, Subject fields completed. It should clearly state the questions and supporting arguments.

Late Submissions: Late submissions will not be graded.

Descriptive Epidemiology E-poster

Select a cancer in which you have an interest. I recommend a solid tumor (not a lymphoma or leukemia) and a more common cancer (examples breast, colorectal, prostate, ovarian, brain, endometrial, pancreas). Using data from existing cancer registries describe this cancer in terms of (1) public health impact (using our measures of impact: incidence, mortality, prevalence rates), (2) distribution by person (age, gender, race, insurance), place (nation, state, county within a state), and rates over time, and (3) risk or etiologic factors. Comment on what these data tell you about possible etiology factors and this cancer. Examples of posters will be shared in class.

Final Project

You will be provided a dataset from the Cancer Registry (e.g., Georgia or another state of your interest). Among the six different cancers available (breast, colorectal, lung, uterine, pancreatic, ovarian), pick one cancer on which you would like to focus. You will generate at least one specific hypothesis regarding survival of the cancer patients, e.g., patients in rural Georgia with this cancer have poorer survival than those in urban Georgia. You will analyze the data using univariate, bivariate, logistic regression, and survival analyses (Cox regression) and write a 15 page doubled spaced report summarizing your findings. You will support your report with proper references.

In Class Readings

1. Anderson KN, Schwab RB, Martinez ME. Reproductive Risk Factors and Breast Cancer Subtypes: A Review of the Literature. Breast Cancer Res Treat. 2014 February ; 144(1): 1–10. doi:10.1007/s10549-014-2852-7.
2. Bagnardi V, RotaM, Botteri E et al. 2013. Light alcohol drinking and cancer: a meta-analysis. Annals of Oncology 24: 301–308.
3. Burnett-Hartman AN, Newcomb PA, Potter JD. Infectious agents and colorectal cancer: A review of *Helicobacter pylori, Streptococcus bovis*, JC virus, and human papillomavirus. Cancer Epidemiol Biomarkers Prev. 2008 November ; 17(11): 2970–2979. doi: 10.1158/1055-9965.EPI-08-0571.
4. Cao Y, Willett C, Rimm E, Stampfer MJ, Giovannucci EL. Light to moderate intake of alcohol, drinking patterns, and risk of cancer: results from two prospective US cohort studies BMJ 2015;351:h4238 | doi: 10 .113 6/bmj.h4238
5. Chen Z, Wang P, Woodrow J, Zhu Y, Roebothan B, Mclaughlin JR, Parfrey PS. . Dietary patterns and colorectal cancer: results from a Canadian population-based study. Nutrition Journal 2015, 14:8 http://www.nutritionj.com/content/14/1/8.
6. Clarke-MF, Becker-MW. Stem cells: the real culprits in cancer? Scientific-American 2006 Jul; 295(1): 52-9.

7. Collaborative Group on Epidemiological Studies of Ovarian Cancer . 2015. Menopausal hormone use and ovarian cancer risk: individual participant meta-analysis of 52 epidemiological studies. Lancet 385(9): 1835-1842.
8. Daly B & Olufunmilayo. A perfect storm: how tumor biology, genomics, and health care delivery patterns collide to create a racial survival disparity in breast cancer and proposed interventions for change. CA Cancer J Clin 65(3): 221-238.
9. Darby S, Hill D, Auvinen A et al. 2004. Radon in homes and risk of lung cancer: collaborative analysis of individual data from 13 European case-control studies. BMJ, doi:10.1136/bmj.38308.477650.63.
10. De Menezes RF, Bergmann A, Thuler LCS. 2013 Alcohol Consumption and Risk of Cancer: a Systematic Literature Review. Asian Pac J Cancer Prev, 14 (9), 4965-4972.
11. Fleming ST, Pursley HG, Newman B, Pavlov D, Chen K. (2005). Comorbidity as a predictor of stage of illness for patients with breast cancer. Medical Care, 43(2):132-140.
12. Gibbs WW. Untangling the roots of cancer. Scientific-American 2003; 289(1): 56-65 (4 bib)
13. Goodman M, Naiman JS, Goodman D, LaKind JS. 2012 Cancer clusters in the USA: What do the last twenty years of state and federal investigations tell us? *Critical Reviews in Toxicology*, 2012; 42(6): 474–490
14. Gonzalez CA, Megraub F, Buissonniere A et a. 2012. Helicobacter pylori infection assessed by ELISA and by immunoblot and noncardia gastric cancer risk in a prospective study: the Eurgast-EPIC project. Annals of Oncology 23: 1320–1324.
15. Hayes JH, Barry MJ. 2014. Screening for Prostate Cancer With the Prostate-Specific Antigen Test A Review of Current Evidence. JAMA 311(11):1143-1149.
16. Kalager M et al. 2012. Overdiagnosis of Invasive Breast Cancer Due to Mammography Screening: Results From the Norwegian Screening Program. Annals of Internal Medicine 156(7).
17. Klausner RD. The fabric of cancer cell biology-Weaving together the strands. Cancer Cell. 2002 1(1): 3-10.
18. Klein EA,Thompson IM, Tangen CM. 2011. Vitamin E and the Risk of Prostate Cancer: The Selenium and Vitamin E Cancer Prevention Trial (SELECT). JAMA 306(14):1549-1556.
19. Kuang J, Jiang Z, Chen Y, Ye W, Yang Q, Wang H, Xie D. KiuangSmoking Exposure and Survival of Patients with Esophagus Cancer: A Systematic Review and Meta-Analysis. Gastroenterology Research and Practice Volume 2016.
20. Kuldorff M et al. 1998. Evaluating Cluster Alarms: A Space-Time Scan Statistic and Brain Cancer in Los Alamos, New Mexico. AJPH 88(9):1377-1380.
21. Lee PN, Forey BA, Coombs KJ. Systematic review with meta-analysis of the epidemiological evidence in the 1900s relating smoking to lung cancer. BMC Cancer 2012, 12:385.
22. Lippi G, Mattiuzzi C, Cervellin G. 2016. Meat consumption and cancer risk: a critical review of published meta-analyses. Critical Reviews in Oncology/Hematology, 97:1-14.
23. Loberg M, Lousda ML, Bretthauer M, Kalager M. Benefits and harms of mammography screening. Breast Cancer Research (2015) 17:63 DOI 10.1186/s13058-015-0525-z.
24. Lynch S, Vrieling A, Lubin JH et al. Cigarette Smoking and Pancreatic Cancer: A Pooled Analysis From the Pancreatic Cancer Cohort Consortium. Am J Epidemiol 2009;170:403–413
25. Puliti D et al. 2012. Overdiagnosis in mammography screening for breast cancer in Europe: a literature review. J Medical Screening 19 Suppl1:42–56.
26. Reid A, de Klerk N, Musk AW. 2011 Does Exposure to Asbestos Cause Ovarian Cancer? A Systematic Literature Review and Meta-analysis. Cancer Epidemiol Biomarkers Prev; 20(7):1287-1295.

27. Schottenfeld D and Beebe-Dimmer JL. Advances in cancer epidemiology: understanding causal mechanisms and the evidence for implementing interventions. Annu Rev Public Health 2005, 26: 37-60.

28. Shikata K,Ninomiya T, KiyoharavY. 2014. Diabetes mellitus and cancer risk: Review of the epidemiological evidence. Cancer Science 104(1):1-14.

Instructor Expectations

1. I expect you to attend every class session. The components are highly interrelated; missing a class will detract from the learning potential of subsequent sessions, as well as your evaluation of in-class discussion.
2. I expect you to be in the classroom and prepared to begin work at the scheduled starting time for each session.
3. I expect you to actively participate in the discussions. This is not the type of class where you can "sit back and listen."
4. I expect you to submit written assignments using proper English grammar, syntax, and spelling. You are encouraged to use spell check and grammar check prior to submitting your written work. The University Writing Center is available to anyone who may need assistance (http://class.georgiasouthern.edu/writingc/). Grammar, syntax, and spelling will account for 30% of the grade for each assignment.
5. I expect (and encourage) you to provide honest and timely feedback regarding the content and process of this course throughout the semester.
6. I expect (and encourage) you to share the responsibility for making this course an enjoyable and beneficial learning experience.
7. Wikipedia *cannot* be used as a cited reference as noted by a co-founder of Wikipedia! You may use Wikipedia to identify appropriate source material. Remember Wikipedia is *not* peer reviewed!
8. I require that each leaner will be consistent in his/her usage of referencing/citation, formatting style, etc. as a guide for writing papers for this course and the grading rubric will be based on its precepts.

Academic Misconduct:

As a student registered at this University, it is expected that you will adhere to only the strictest standards of conduct. It is recommended that you review the latest edition of the *Student Conduct Code* book, as well as the latest *Undergraduate & Graduate Catalog* to familiarize yourself with the University's policies in this regard. Your continued enrollment in this course is an implied contract between you and the instructor on this issue; from this point forward, it is assumed that you will conduct yourself appropriately.

Academic integrity relates to the appropriate use of intellectual property. The syllabus, lecture notes, and all materials presented and/or distributed during this course are protected by copyright law. Students are authorized to take notes in class, but that authorization extends only to making one set of notes for personal (and no other) use. As such, students are not authorized to sell, license, commercially publish, distribute, transmit, display, or record notes in or from class without the express written permission of the instructor.

The Fine Print:

"According to the Academic Dishonesty Policy of GSU, Plagiarism includes (but is not limited to):

A. Directly quoting the words of others without using quotation marks or indented format to identify them.

B. Using published or unpublished sources of information without identifying them.

C. Paraphrasing material or ideas without identifying the source.

D. Unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic material.

If you are accused of plagiarism by a JPHCOPH, the following policy, as per the Judicial Affairs website (http://students.georgiasouthern.edu/judicial/faculty.htm) will be enforced:

PROCEDURES FOR ADJUDICATING ACADEMIC DISHONESTY CASES

First Offense - In Violation Plea

1.If the professor and the Dean of Students agree that the evidence is sufficient to warrant a charge of academic dishonesty, the professor should contact the Office of Judicial Affairs to determine if this is a first violation of academic dishonesty. The incident will be reported via the following website: http://students.georgiasouthern.edu/judicial/faculty.htm

2. If it is a first violation, the professor should talk with the student about the violation. If the student accepts responsibility in writing and the professor decides to adjudicate the case, the following procedures will be followed:

a. The student will be placed on disciplinary probation for a minimum of one semester by the Office of Judicial Affairs.

b. The student will be subject to any academic sanctions imposed by the professor (from receiving a 0 on the assignment to receiving a failing grade in the class).

Scan copy of all the material involved in the case (Academic Dishonesty Report Form and the Request For Instructor to Adjudicate Form) and a brief statement from the professor concerning the facts of the case and the course syllabus should be mailed to the Office of Judicial Affairs for inclusion in the student's discipline record.

First Offense - Not In Violation Plea (student does not admit the violation)

If the professor and the Dean of Students agree that the evidence is sufficient to warrant a charge of academic dishonesty, the professor should contact the Office of Judicial Affairs to determine if this is the first or second violation of academic dishonesty. The student will be charged with academic dishonesty and the University Judicial Board or a University Hearing Officer would hear the case. If the student is found responsible, the following penalty will normally be imposed:

a. The student will be placed on Disciplinary Probation for a minimum of one semester by the Office of Judicial Affairs.

b. The student will be subject to any academic sanctions imposed by the professor.

Second Violation of Academic Dishonesty

If the professor and the Dean of Students agree that the evidence is sufficient to warrant a charge of academic dishonesty, and if it is determined this is the second violation, the student will be charged with academic dishonesty and the University Judicial Board or a University Hearing Officer would hear the case.

If the student is found responsible, the following penalty will normally be imposed:

a. Suspension for a minimum of one semester or expulsion.

b. The student will be subject to any academic sanctions imposed by the professor.

NOT RESPONSIBLE FINDING

When a student is found not responsible of academic dishonesty, the work in question (assignment, paper, test, etc.) would be forwarded to the Department Chair. It is the responsibility of the Department Chair to ensure that the work is evaluated by a faculty member other than the individual who brought the charge and, if necessary, submit a final grade to the Registrar. For the protection of the faculty member and the student, the work in question should not be referred back to the faculty member who charged the student with academic dishonesty.

In the case of a Department Chair bringing charges against a student, an administrator at the Dean's level will ensure that the student's work is evaluated in an appropriate manner.

CONFIDENTIALITY

In accordance with provisions of the Family Educational Rights and Privacy Act of 1974 and the Georgia Open Records Act, any information related to a violation of academic dishonesty or the outcome of a judicial hearing regarding academic dishonesty, is prohibited and must be treated as confidential by members of the faculty."

Academic Handbook:

Students are expected to abide by the Academic Handbook, located at
http://students.georgiasouthern.edu/sta/guide/. Your failure to comply with any part of this
Handbook may be a violation and thus, you may receive an F in the course and/or be referred for
disciplinary action.

University Calendar for the Semester:

The University Calendar is located with the semester schedule, and can be found at:
http://calendar.georgiasouthern.edu/

Attendance Policy:

Federal regulations require attendance be verified prior to distribution of financial aid allotments.
Attendance will not be recorded after this initial period.

One Final Note:

The contents of this syllabus are as complete and accurate as possible. The instructor reserves
the right to make any changes necessary to the syllabus and course material. The instructor will
make every effort to inform students of changes as they occur. It is the responsibility of the
student to know what changes have been made in order to successfully complete the
requirements of the course.

Accommodations

If you have a documented disability that requires academic accommodations, please see me as
soon as possible during scheduled office hours. In order to receive accommodations in this
course, submit to me a Letter of Accommodation from the Student Disability Resource Center
(http://students.georgiasouthern.edu/disability/). If you have not already done so, please register
with the Student Disability Resource Center for coordination of campus disability services
available to students with disabilities.