

UNIVERSITY SENATE REVIEW AND CONSULTATION SUMMARY SHEET

Proposal Title: CPH 615 CANCER EPIDEMIOLOGY

Proposal Contact: Thomas Tucker
121 Washington Avenue Room 113
219-0773 ext 225 tct@kcr.uky.edu

Becki Flanagan
CPH Office of Academic Affairs
121 Washington Avenue Room 110
218-2092 becki@uky.edu

Instruction: To facilitate the processing of this proposal please identify the groups or individuals reviewing the proposal, identify a contact person for each entry, provide the consequences of the review (specifically, approval, rejection, no decision and vote outcome, if any) and please attach a copy of any report or memorandum developed with comments on this proposal.

Reviewed By	Contact person	Consequences of Review	Date of Proposal Review	Review Summary Attached?
Dept of Epidemiology	Thomas Tucker, Chair	Approved	4-30-08	Yes
Academic Affairs Committee	Marta Mendiondo, Chair	Approved	6-17-08	Yes
Faculty Council	Glyn Caldwell, Chair	Approved	7-17-08	Yes
Office of Academic Affairs	Linda Alexander, Associate Dean	Approved	8-28-09	Yes



UNIVERSITY OF KENTUCKY

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COLLEGE OF PUBLIC HEALTH

M E M O R A N D U M

TO: Health Care Colleges Council

FROM: Linda A. Alexander, EdD
Associate Dean for Academic Affairs

SUBJECT: Proposal for CPH 615 Cancer Epidemiology

DATE: August 29, 2008

It is the intention of the Department of Epidemiology in the College of Public Health to formally establish a course to teach students in the MPH degree program about the principles and tools of epidemiology to study cancer. The course has been taught on other previous occasions as a special topics course and was very well received by students. It is being added to the concentration area's list of selectives.

This course proposal has been reviewed and approved by the Academic Affairs Committee and the Faculty Council, according to our college's established bylaws.

Further information about this course can be obtained by contacting the course director, Dr. Steve Fleming via phone at 218-2229 or via email at stflem2@uky.edu.

TO: Marta Mendiondo
Chair, Academic Affairs Committee

CC: Steven Fleming

FROM: Glyn G. Caldwell
Chair, Faculty Council


DATE: June 26, 2008

SUBJECT: Approval of CPH 615 Cancer Epidemiology

On June 26, 2008, the Faculty Council of the College of Public Health unanimously approved the course 615 Cancer Epidemiology.

MEMORANDUM

To: Faculty Council

From: Marta S. Mendiondo 
Chair, Academic Affairs Committee

Date: June 17, 2008

The Academic Affairs committee approved the proposed new course, CPH 615 Cancer Epidemiology.

APPLICATION FOR NEW COURSE

1. Submitted by the College of Public Health Date: 3/3/08

Department/Division proposing course: Epidemiology

2. Proposed designation and Bulletin description of this course:

a. Prefix and Number CPH 615

b. Title* Cancer Epidemiology

*If title is longer than 24 characters, write a sensible title (24 characters or less) for use on transcripts:

c. Courses must be described by at least one of the categories below. Include the number of actual contact hours per week for each category, as applicable.

() CLINICAL () COLLOQUIUM () DISCUSSION () LABORATORY (X) LECTURE
() INDEPEND. STUDY () PRACTICUM () RECITATION () RESEARCH () RESIDENCY
() SEMINAR () STUDIO () OTHER – Please explain: _____

d. Please choose a grading system: Letter (A, B, C, etc.) Pass/Fail

e. Number of credit hours: 3

f. Is this course repeatable? YES NO If YES, maximum number of credit hours: _____

g. Course description:

This course applies and integrates the principles and tools of epidemiology to the study of cancer. The course includes discussion of the burden of various kinds of cancer across the United States and the world by age, gender, and race/ethnicity, the underlying biology behind the development of cancer in humans, cancer surveillance, the epidemiology of various kinds of cancer by category of major risk factors such as human behavior (e.g. smoking and alcohol use), endogenous/exogenous hormones, viruses, environmental/occupational, and diet, and sources of data and methods for evaluating cancer screening, measuring the impact of risk factors, determining the incidence of cancer and cancer clusters, measuring patterns of care, and understanding the determinants of survival.

h. Prerequisite(s), if any:

Introduction to Epidemiology (CPH 605) or consent of instructor

i. Will this course be offered through Distance Learning? YES NO

If YES, please circle one of the methods below that reflects how the majority of the course content will be delivered:

Internet/Web-based Interactive video Extended campus Kentucky Educational Television (KET/teleweb) Other

Please describe "Other": _____

3. Teaching method: N/A or Community-Based Experience Service Learning Component Both

APPLICATION FOR NEW COURSE

16. Will adding this course change the degree requirements for ANY program on campus? YES NO
 If YES[‡], list below the programs that will require this course:
-

[‡]In order to change the program(s), a program change form(s) must also be submitted.

17. The major teaching objectives of the proposed course, syllabus and/or reference list to be used are attached.
18. Check box if course is 400G- or 500-level. If the course is 400G- or 500-level, you must include a syllabus showing differentiation for undergraduate and graduate students by (i) requiring additional assignments by the graduate students; and/or (ii) the establishment of different grading criteria in the course for graduate students. (See SR 3.1.4)
19. Within the department, who should be contacted for further information about the proposed new course?

Name: Steve Fleming Phone: 218-2229 Email: stflem2@uky.edu

20. Signatures to report approvals:

4/30/2008
 DATE of Approval by Department Faculty

Thomas C. Tucker / Thomas C. Tucker
 printed name Reported by Department Chair signature

7-17-08
 DATE of Approval by College Faculty

Linda A. Alexander / Linda Alexander
 printed name Reported by College Dean signature

* DATE of Approval by Undergraduate Council

 printed name Reported by Undergraduate Council Chair signature

* DATE of Approval by Graduate Council

 printed name Reported by Graduate Council Chair signature

9/16/08
 * DATE of Approval by Health Care Colleges Council (HCCC)

Heidi Anderson / Heidi Anderson
 printed name Reported by Health Care Colleges Council Chair signature

* DATE of Approval by Senate Council

 Reported by Office of the Senate Council

* DATE of Approval by University Senate

 Reported by Office of the Senate Council

*If applicable, as provided by the *University Senate Rules*. (<http://www.uky.edu/USC/New/RulesandRegulationsMain.htm>)

University of Kentucky College of Public Health
CPH 615: Cancer Epidemiology
Spring 2009

Course Demographics

- Meeting day/s, time and place: 12– 2:30 p.m., Tuesday in CPH 115

Instructor Information

Steven T. Fleming, Ph.D.

Office: SPH Building Room 213C

Telephone: (859) 218-2230 (Phone Epidemiology Office)
(606) 218-2229 (Phone: Work-Office)

Office Hours: Wednesday and Friday 9:00-3:30 by appointment

Teaching Assistant: Rachel Hall
218-2226

Course Rationale

This course applies and integrates the principles and tools of epidemiology to the study of cancer. The course includes discussion of the burden of various kinds of cancer across the United States and the world by age, gender, and race/ethnicity, the underlying biology behind the development of cancer in humans, cancer surveillance, the epidemiology of various kinds of cancer by category of major risk factors such as human behavior (e.g. smoking and alcohol use), endogenous/exogenous hormones, viruses, environmental/ occupational, and diet, and sources of data and methods for evaluating cancer screening, measuring the impact of risk factors, determining the incidence of cancer and cancer clusters, measuring patterns of care, and understanding the determinants of survival.

Course Goals

After completion of this course in Cancer Epidemiology the student will be able to:

1. Describe the burden of various kinds of cancer across the United States and the world by age, gender, and race/ethnicity
2. Discuss the underlying biology behind the development of cancer in humans.
3. Describe the epidemiology of various kinds of cancer by category of major risk factor(s) for each cancer: human behavior (e.g. smoking and alcohol use), endogenous/exogenous hormones, viruses, environmental/occupational, and diet.
4. Discuss the basic concepts of cancer surveillance
5. Describe the sources of data and methods for: evaluating cancer screening, measuring the impact of risk factors, determining the incidence of cancer and cancer clusters, measuring patterns of care, and understanding the determinants of survival.

Relationship to Public Health Degree Program Goal(s) and Objectives

This course relates directly to the accomplishment of the educational program goals for the M.P.H. and Dr.P.H. degrees. The MPH goal and objectives are described in the Student Handbook which students received upon enrollment into the MPH degree program. Similarly, the Dr.P.H. goal and objectives are described in the Student Handbook which students receive upon enrollment into the Dr.P.H. degree program. Please reference the appropriate educational program goals throughout the semester, as they will provide a framework for this course and as such will contribute to your preparation for successfully completing other degree program requirements (e.g., capstone, practicum, and Dr.P.H. comprehensive examination).

Relationship Of This Course To Epidemiology Concentration Area Terminal Objectives

In relationship to the MPH degree, this course contributes toward fulfillment of the following terminal objectives for students concentrating in epidemiology.

1. Explain the purposes and applications of epidemiology.
2. Search and/or critically review the epidemiology literature.
3. Identify and use appropriate epidemiology study designs & principles.
4. Collect and manage data for investigating epidemiology issues
5. Analyze epidemiological data using appropriate statistical methods.
6. Interpret and clearly communicate findings.
7. Assess the ethical issues that confront epidemiology and appropriately address these issues.
8. Integrate principles of epidemiology into the practice of public health.

In relationship to the Dr.P.H. degree, this course contributes toward fulfillment of the following terminal objectives for students concentrating in epidemiology.

1. Explain and apply the principles and methods of epidemiology in a wide variety of clinical, community, environmental and public health situations.
2. Search, critically review, and synthesize and interpret the epidemiologic and public health literature to impact public health policy.
3. Identify and employ appropriate epidemiologic study designs to develop fundable epidemiologic and public health programs.
4. Direct the collection, compilation, and management of epidemiologic data for surveillance and investigation of epidemiologic issues.
5. Direct the analysis of epidemiologic data using advanced statistical methods.
6. Interpret and clearly communicate complicated epidemiological findings to collaborators, legislators, administrators, and the public to effect public health policy.
7. Summarize and assess ethical issues that confront epidemiology and public health and integrate appropriate strategies to resolve those issues.
8. Effectively lead, educate, and mentor students, coalitions, clinicians, legislators, administrators, public health practitioners, and other persons to utilize epidemiological data, methods and findings to impact public health and public health practice.

Course Content

Class Date	Topic	Reading Assignment
Week 1	The Biology of Cancer Lewis Kelly (confirmed)	N & P: chapters 3 & 4 Klausner RD. The fabric of cancer cell biology-Weaving together the strands. <i>Cancer Cell</i> . 2002 1(1): 3-10. Gibbs WW. Untangling the roots of cancer. <i>Scientific-American</i> 2003; 289(1): 56-65 (4 bib) Clarke-MF, Becker-MW. Stem cells: the real culprits in cancer? <i>Scientific-American</i> 2006 Jul; 295(1): 52-9
Week 2	Introduction to cancer epidemiology - terminology	N & P: chapters 1 & 2 Lagiou,-P; Adami,-H-O; Trichopoulos,-D. Causality in cancer epidemiology. 2005. <i>European Journal of Epidemiology</i> . 20(7): 565-574. Schottenfeld D and Beebe-Dimmer JL. Advances in cancer epidemiology: understanding causal mechanisms and the evidence for implementing interventions. <i>Annu Rev Public Health</i> 2005, 26: 37-60.
Week 3	viruses and cancer – cervical, Epstein-Barr, hepatitis, stomach Nancy Schoenberg (confirmed)	N & P: chapters 12 Kadow JF, Regueiro-Ren A, Weinheimer SP. The role of viruses in human cancer development and antiviral approaches for intervention. <i>Curr Opin-Investig Drugs</i> . 2002 3(11): 1574-9. Cuzick J. Viruses and cancer. <i>J Epidemiol-Biostat</i> . 2000; 5(3): 143-52. Eckhart W. Viruses and human cancer. <i>Sci-Prog</i> . 1998; 81 (Pt 4): 315-28.
Week 4	Human behavior and cancer – alcohol, smoking, sun exposure Case Study: Smoking and Lung Cancer	N & P: chapters 9-11 Yoder LH. Lung Cancer Epidemiology. 2006 <i>MEDSURG Nursing</i> 15(3):171-174. Bofetta, P., et al. The burden of cancer attributable to alcohol drinking. <i>Int J Cancer</i> 2006 119(4):884-7 Leffell-DJ; Brash-DE. Sunlight and skin cancer <i>Scientific-American</i> 1996 275(1): 52-3, 56-9 (4 bib)
Week 5	Environmental, Occupational factors and	N & P: chapter 8

	<p>cancer Claudia Hopenhayn (confirmed)</p>	<p>Hopenhayn-Rich et al, Bladder cancer mortality associated with arsenic in drinking water in Cordoba, Argentina. <i>Epidemiology</i>, 1996; 7:117-124.</p> <p>Cantor et al, Drinking water source and chlorination byproducts. I. Risk of bladder cancer. <i>Epidemiology</i>, 1998; 9:21-28</p> <p>Bates et al, Is testicular cancer an occupational disease of fire fighters? <i>American Journal of Industrial Medicine</i>, 2001; 40:263-270</p>
Week 6	<p>Immunity and cancer risk; diet and cancer, colorectal cancer</p>	<p>N & P: chapters 13 & 16</p> <p>Jackson-Thompson,-J; Ahmed,-F; German,-R-R; Lai,-S-M; Friedman,-C. Descriptive epidemiology of colorectal cancer in the United States, 1998-2001. <i>Cancer</i> 2006 107(5 Suppl): 1103-1111.</p> <p>Loftus,-E-V Jr. Epidemiology and risk factors for colorectal dysplasia and cancer in ulcerative colitis. <i>Gastroenterol-Clin-North-Am</i> 2006 35(3): 517-31.</p> <p>Norat, T., et al., Meat, fish, and colorectal cancer risk: the European Prospective Investigation into cancer and nutrition. <i>J Natl Cancer Inst</i>, 2005. 97(12): p. 906-16.</p>
Week 7	<p>Bio-markers, genetic factors and cancer Andre Baron (confirmed)</p>	<p>N & P: chapter 6 & 7</p> <p>*Glebov OK, Rodriguez LM, Lynch P, Patterson S, Lynch H, Nakahara K, Jenkins J, Cliatt J, Humbyrd CJ, Denobile J, Soballe P, Gallinger S, Buchbinder A, Gordon G, Hawk E, Kirsch IR. Celecoxib treatment alters the gene expression profile of normal colonic mucosa. <i>Cancer-Epidemiol-Biomarkers-Prev.</i> 2006 15(7): 1382-91.</p> <p>*Lou J, Fatima N, Xiao Z, Stauffer S, Smythers G, Greenwald P, Ali IU . Proteomic profiling identifies cyclooxygenase-2-independent global proteomic changes by celecoxib in colorectal cancer cells. <i>Cancer-Epidemiol-Biomarkers-Prev.</i> 2006 15(9): 1598-606.</p> <p>Hursting SD, Slaga TJ, Fischer SM, DiGiovanni J, Phang JM. Mechanism-based cancer prevention approaches: targets, examples, and the use of transgenic mice. <i>J-Natl-Cancer-Inst.</i> 1999 91(3): 215-25.</p>

		Perera FP, Weistein IB. Molecular epidemiology: recent advances and future directions. <i>Carcinogenesis</i> 2000 21(3):517-524.
Week 8	Endogenous and exogenous hormones and cancer – breast, prostate, endometrial, and ovarian cancer Case Study: Oral Contraceptive Use and Ovarian Cancer	N & P: chapters 14 & 15 MacMahon B. Epidemiology and the causes of breast cancer. 2006 <i>Int-J-Cancer</i> 118(10): 2373-2378. Ahlgren, M, Melbye, M, Wohlfahrt, J, and Sørensen, TI. Growth Patterns and the Risk of Breast Cancer in Women. <i>NEJM</i> 2004 351:1619-1626. McDavid,-K; Lee,-J; Fulton,-J-P; Tonita,-J; Thompson,-T-D. Prostate cancer incidence and mortality rates and trends in the United States and Canada. <i>Public-Health-Rep.</i> 2004 119(2): 174-86. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and hormonal contraceptives: collaborative reanalysis of individual data on 53 297 women with breast cancer and 100 239 women without breast cancer from 54 epidemiological studies. <i>Lancet.</i> 1996 Jun 22;347(9017):1713-27.
	SPRING BREAK	
Week 9	Cancer screening: concepts source of data and methods	N & P Chapter 18 Etzioni RD, Connor RJ, Porok PC, Self SG. Design and analysis of cancer screening trials. <i>Stat Methods Med Res.</i> 1995 4(1): 3-17. Thompson IM, Pauler DK, Goodman PJ et al. 2004. Prevalence of prostate cancer among men with a prostate-specific antigen level ≤ 4.0 ng per milliliter. <i>NEJM</i> 350(22): 2239-2246. Elmore JG, Barton MB, Mocerri VM et al. 1998. Ten-year risk of false positive screening mammograms and clinical breast examinations. <i>NEJM</i> 338(16): 1089-96.
Week 10	MID TERM EXAM	
Week 11	Cancer surveillance 1: concepts and methods – *Tom Tucker	Hiatt RA. The future of cancer surveillance. <i>Cancer Causes Control.</i> 2006 17(5): 639-46. Glaser SL, Clarke CA, Gomez SL, O'Malley CD, Purdie DM, West DW. Cancer surveillance research: a vital subdiscipline of cancer epidemiology. <i>Cancer Causes Control.</i> 2005. 16(9):1009-19.
Week 12	Cancer surveillance 2: concepts and methods –	Wingo PA, Howe HL, Thun MJ, Ballard-Barbash R, Ward E, Brown ML, Sylvester J, Friedell GH, Alley L, Rowland

	*Tom Tucker	<p>JH, Edwards BK. A national framework for cancer surveillance in the United States. <i>Cancer Causes Control</i>. 2005 16(2): 151-70.</p> <p>Penberthy L, McClish D, Manning C, Retchin S, Smith T. The added value of claims for cancer surveillance: results of varying case definitions. <i>Med Care</i>. 2005 43(7): 705-12.</p>
Week 13	Risk Factors: concepts, sources of data, and methods: NHIS, BRFSS	<p>Fleming ST, Pursley HG, Newman B, Pavlov D, Chen K. 2005. Comorbidity as a predictor of stage of illness for patients with breast cancer. <i>Medical Care</i> 43(2):132-140.</p> <p>Fleming, S.T., McDavid, K., Pearce, K., and Pavlov, D. (2006) Comorbidities and the risk of late-stage prostate cancer. <i>TSW Urology</i> 1, 163–173. DOI 10.1100/tswurol.2006.142.</p>
Week 14	Patterns of Care: Concepts, sources of Data and methods: SEER-Medicare	<p>McDavid K, Schymura MJ, Armstrong L, Santilli L, Schmidt B, Byers T, Steele CB, O'Connor L, Schlag NC, Roshala W, Darcy D, Matanoski G, Shen T, Bolick-Aldrich S. Rationale and design of the National Program of Cancer Registries' Breast, Colon, and Prostate Cancer Patterns of Care Study. <i>Breast,-Colon-and-Prostate-Cancer-Data-Quality-and-Patterns-of-Care-Study-Group</i>. <i>Cancer Causes Control</i>. 2004 15(10): 1057-66.</p> <p>Warren JL, Klabunde CN, Schrag D, Bach PB, Riley GF. Overview of the SEER-Medicare Data: Content, Research Applications, and Generalizability to the United States Elderly Population. <i>Med Care</i> 2002 Aug;40(8 Suppl):3-18</p> <p>Potosky AL, Riley GF, Lubitz JD, Mentnech RM, Kessler LG. Potential for cancer related health services research using a linked Medicare-tumor registry database. <i>Med Care</i>. 1993 Aug;31(8):732-48.</p>
Week 15	Sources of Data: mortality and Survival Survival Analysis Cox Regression	<p>Fleming, ST, Dmitrienko A, Rastogi A. 1999. A Comprehensive Prognostic Index to predict mortality based on multiple comorbidities: A Focus on Breast Cancer. <i>Medical Care</i>. 37(6): 601-614.</p> <p>Roohan PJ, Bickell NA, Baptiste MS, Therriault GD, Ferrara EP, Siu AL. Public health briefs. Hospital volume differences and five-year survival from breast cancer <i>American-Journal-of-Public-Health</i> 1998. 88(3): 454-7 (24 ref)</p> <p>Ellison-LF. An empirical evaluation of period survival analysis using data from the Canadian Cancer Registry. <i>Annals-of-Epidemiology</i> 2006 Mar; 16(3): 191-6 (25 ref)</p>

Instructional Strategies

The course will consist of fifteen 2 ½ hour sessions given on Wednesday 12:00 – 2:30 in CPH 115. In general, the first half of the session will consist of lectures from S. Fleming and other colleagues. This will be followed by an oral student presentation of a current or historically relevant research publication during the second hour using the journal club format. Finally, a round table small group discussion format will be used to focus on questions and issues relevant to the topic during the final 1/2 hour.

Assessment and Evaluation

1. Mid-term examination	34
2. Case Study	33%
3. Journal articles, Class participation	33%

Each student is expected to participate in class discussions each week by reading and coordinating a discussion of assigned articles. Students are also expected to prepare answers to assigned discussion questions at the end of the chapter.

1. Tests - There is a mid-term examination in this course.
2. Journal Club Presentations & Discussion Question Essays - A schedule of student journal club presentations will be developed during the first class period. Journal club presentations will only be rescheduled for legitimate reasons accompanied by verifiable documentation. In addition to the oral presentation, students will be required to provide a copy of their presentation slides (or overheads) with speaker's notes to each person in the class as a handout packet at the time of the journal club. Students will be expected to attend all class sessions and to participate in discussions and problem sets related to the journal club. Three Discussion Question Essays (2-3 page limit double spaced; 10-12 pt font) will be due by 12:00 midnight on Friday for grading by the instructor. The essays should be e-mailed to Dr. Fleming at stflem2@uky.edu.
3. Each student is expected to write a 10 page case study of one controversial topic in cancer epidemiology. Suggested topics include: (1) the efficacy of breast self-examination; (2) screening for lung cancer; (3) PSA screening for prostate cancer; (4) smoking and breast cancer; (5) electromagnetic field exposure and brain cancer; (6) dietary fat and breast cancer. You may suggest another topic, not listed above, if approved by me. Make sure to include available information from studies in humans (clinical trials, case-control & cohort studies) as well as laboratory experiments and ecologic evidence.
4. Grading - Journal club presentation grades will be based on peer and instructor assessment. Case studies that are not completed in a timely manner according to the class schedule will be subject to point deductions.

Case Study

Each student is expected to write a 10 page case study of one controversial topic in cancer epidemiology. Suggested topics include: (1) the efficacy of breast self-examination; (2) screening for lung cancer; (3) PSA screening for prostate cancer; (4) smoking and breast cancer; (5) electromagnetic field exposure and brain cancer; (6) dietary fat and breast cancer. You may

suggest another topic, not listed above, if approved by me. Make sure to include available information from studies in humans (clinical trials, case-control & cohort studies) as well as laboratory experiments and ecologic evidence.

1. Part 1: Background
 - a. How prevalent is the disease and risk factor
 - b. What is the burden of disease in terms of mortality
 - c. Summarize the existing literature, are the results conflicting?
 - d. Propose one or more studies to resolve the conflict. You may choose one or two existing case-control or cohort studies
 - e. Ask questions regarding the design of case-control or cohort studies to examine your particular topic. For example, you may ask question regarding issues of “bias” or “confounding” or sources of “cases” and “controls”
2. Part 2: Study One
 - a. Describe the first study and discuss how it deals with bias and confounding
 - b. Present results, 2 x 2 table and/or multivariate results
 - c. Ask questions about these results regarding interpretation of relative risk or odds ratio, bias, confounding, statistical significance, for example, how do adjusted and unadjusted odds ratio compare.
3. Part 3: Further analyses from study one such as stratification or examination of issues such as effect modification
4. Part 4: Study Two
 - a. Describe the first study and discuss how it deals with bias and confounding
 - b. Present results, 2 x 2 table and/or multivariate results
 - c. Ask questions about these results regarding interpretation of relative risk or odds ratio, bias, confounding, statistical significance, for example, how do adjusted and unadjusted odds ratio compare.
5. Part 5: Further analyses from study two such as stratification or examination of issues such as effect modification
6. Part 6: Conclusion: Based on the evidence, is there support for a causal relationship between the risk factor and the disease.

Instructional Resources

Required Text: Nasca PC and Pastides H. Fundamentals of Cancer Epidemiology. 2001 Gaithersburg: Aspen Publications.

Other Recommended (reference) epidemiology books:

- 1.) Adami H, Hunter D, Trichopoulos D. Textbook of Cancer Epidemiology. 2002. New York: Oxford University Press.
- 2.) Schottenfeld D, Fraumeni JF. Cancer Epidemiology and Prevention. 2006. New York: Oxford University Press.
- 2) Rothman, KJ. Epidemiology: An Introduction. New York: Oxford UP, 2002
- 3) Last, JM ed. A Dictionary of Epidemiology (4th Ed.). New York: Oxford UP, 2001.
- 4) Aschengrau, A. & Seage GR. Essentials of Epidemiology in Public Health. Sudbury: Jones and Bartlett Publishers, 2003.
- 5) Timmreck TC, An Introduction to Epidemiology (3rd Ed.). Boston: Jones and Bartlett, 2002.

- 6) Fleming ST, Scutchfield FD, Tucker TC. Managerial Epidemiology. Chicago: Health Administration Press, 2000.
- 7) Garrett, Laurie, The Coming Plague, New York: Penguin Books, 1995.

Additional readings: Most class sessions include additional readings. Full text versions are available on-line. Students will not be tested from the readings, except to the extent that they are covered in class lectures.

Administrative Comments/Course Policies

Expectations with regard to academic honesty:

Academic honesty is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably prepared, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from a grade of "E" to expulsion from the University. Both cheating and plagiarism are considered academic dishonesty. Cheating refers to any unauthorized assistance during examinations, such as notes or handouts. It also includes either giving or taking the answers to examination questions to/from other student(s). Plagiarism is academic "theft", and includes not properly crediting another author for his/her work or idea. Any paraphrase or direct quotation from a published or unpublished work should be properly cited with a footnote or reference. Students must be particularly careful not to engage in plagiarism, even inadvertently, since computers and internet web-browsing seem to facilitate this process.

Enabling 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, you must provide me with a Letter of Accommodation from the Disability Resource Center (www.uky.edu/TLC/grants/uk_ed/services/drc.html). If you have not already done so, please register with the Disability Resource Center (Room 2 Alumni Gym, 257-2754, jkarnes@uky.edu) for coordination of campus disability services available to students with disabilities.

Students	Journal Club Articles
	<p>Gibbs WW. Untangling the roots of cancer. <i>Scientific-American</i> 2003; 289(1): 56-65 (4 bib)</p> <p>Schottenfeld D and Beebe-Dimmer JL. Advances in cancer epidemiology: understanding causal mechanisms and the evidence for implementing interventions. <i>Annu Rev Public Health</i> 2005, 26: 37-60.</p>
	<p>Cuzick J. Viruses and cancer. <i>J Epidemiol-Biostat.</i> 2000; 5(3): 143-52.</p> <p>Eckhart W. Viruses and human cancer. <i>Sci-Prog.</i> 1998; 81 (Pt 4): 315-28.</p>
	<p>Yoder LH. Lung Cancer Epidemiology. 2006 <i>MEDSURG Nursing</i> 15(3):171-174.</p> <p>Bofetta, P., et al. The burden of cancer attributable to alcohol drinking. <i>Int J Cancer</i> 2006 119(4):884-7</p> <p>Leffell-DJ; Brash-DE. Sunlight and skin cancer <i>Scientific-American</i> 1996 275(1): 52-3, 56-9 (4 bib)</p>
	<p>Hopenhayn-Rich et al, Bladder cancer mortality associated with arsenic in drinking water in Cordoba, Argentina. <i>Epidemiology</i>, 1996; 7:117-124.</p> <p>Cantor et al, Drinking water source and chlorination byproducts. I. Risk of bladder cancer. <i>Epidemiology</i>, 1998; 9:21-28</p> <p>Bates et al, Is testicular cancer an occupational disease of fire fighters? <i>American Journal of Industrial Medicine</i>, 2001; 40:263-270</p>
	<p>Jackson-Thompson,-J; Ahmed,-F; German,-R-R; Lai,-S-M; Friedman,-C. Descriptive epidemiology of colorectal cancer in the United States, 1998-2001. <i>Cancer</i> 2006 107(5 Suppl): 1103-1111.</p> <p>Norat, T., et al., Meat, fish, and colorectal cancer risk: the European Prospective Investigation into cancer and nutrition. <i>J Natl Cancer Inst</i>, 2005. 97(12): p. 906-16.</p>
	<p>Glebov OK, Rodriguez LM, Lynch P, Patterson S, Lynch H, Nakahara K, Jenkins J, Cliatt J, Humbyrd CJ, Denobile J, Soballe P, Gallinger S, Buchbinder A, Gordon G, Hawk E, Kirsch IR. Celecoxib treatment alters the gene expression profile of normal colonic mucosa. <i>Cancer-Epidemiol-Biomarkers-Prev.</i> 2006 15(7): 1382-91.</p> <p>Lou J, Fatima N, Xiao Z, Stauffer S, Smythers G, Greenwald P, Ali IU . Proteomic profiling identifies cyclooxygenase-2-independent global proteomic changes by celecoxib in colorectal cancer cells. <i>Cancer-Epidemiol-Biomarkers-Prev.</i> 2006 15(9): 1598-606.</p>
	<p>MacMahon B. Epidemiology and the causes of breast cancer. 2006 <i>Int-J-Cancer</i> 118(10): 2373-2378.</p> <p>Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and hormonal contraceptives: collaborative reanalysis of individual data on 53 297 women with breast cancer and 100 239 women without breast cancer from 54 epidemiological studies. <i>Lancet.</i> 1996 Jun 22;347(9017):1713-27.</p>
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TEXTBOOK END OF CHAPTER QUESTIONS

Biology of Cancer

1. Discuss the role of the interaction of transcription factors with enhancers and promoters in the regulation of gene expression.
2. Discuss the effects of physical and chemical carcinogens on the structure and function of DNA.
3. Discuss the role that mutations in tumor suppressor genes play in the initiation of cancer.
4. Discuss the role of infection with human immunodeficiency virus (HIV) and immune surveillance in the initiation of cancer in AIDS patients.
5. Discuss the role of oncogenes in the initiation of cancer.
6. Discuss the role of tumor promoters in the etiology of cancer.

Viruses and Cancer

1. Discuss the basic issues and problems involved in attempting to find a link between a virus and a cancer using HTLV and adult T-cell leukemias as an example (see Exhibit i2-1).
2. Discuss the epidemiological and virological criteria that might be used to establish a causal relationship between a virus and a cancer using HBV and hepatocellular carcinoma as an example (see Exhibit 12-2).
3. Discuss the epidemiological and virological criteria that might be used to establish a causal relationship between a virus and a cancer using EBV and nasopharyngeal cancer as an example (see Exhibit 12-2).
4. Discuss how the use of new methods for collecting biological specimens and for subtyping viruses has led to a clearer sense of the relationship between HPV and cancer of the uterine cervix.
5. Discuss the role of cofactors in the relationship between HPV and various cancers.

Human Behavior and Cancer (pick two)

1. Discuss the scientific evidence that supports a causal relationship between cigarette smoking and lung cancer in light of Bradford Hill's guidelines for assessing causality in epidemiological research.
2. Discuss the various epidemiological design and measurement issues of concern that arise in studies of environmental tobacco smoke and lung cancer.
3. Discuss the strengths and weaknesses of the experimental studies intended to investigate the relationship between alcohol or its main metabolite and selected cancers.
4. Discuss the extent to which various methodological studies support the hypothesis that alcohol consumption can be measured in a reliable and valid manner in epidemiological studies.
5. Summarize the extent to which the existence of a causal relationship between alcohol consumption and breast cancer is supported by current scientific evidence.
6. Contrast the challenges presented by conducting cumulative, individual exposure assessments of radiation from the bombing of Hiroshima and Nagasaki, from occupational exposures in mining, and from household radon.
7. Suppose you are designing an epidemiological study to investigate the incidence of certain kinds of cancer in a particular community. How would you attempt to address the contribution of background radiation to the cancer rates in (1) an ecological study and (2) a study conducted at the level of the individual.

TEXTBOOK END OF CHAPTER QUESTIONS

Environmental and Occupational Factors and Cancer (pick one)

1. Compare the relative difficulty of conducting cancer epidemiology studies of workplace exposures and studies of broader environmental exposures. Develop a hypothesis about one potential occupational carcinogen and one potential environmental carcinogen and describe several available sources of exposure data, at the individual or group level, that may assist the study.
2. Assume that two epidemiological studies are conducted, one of the potential role of coal dust in the development of lung cancer in miners, and another of the potential role of radiation in the development of leukemia in lab workers. For each study, identify the major potential confounding variables that you would hope to control for. Next, assume that an SMR (retrospective cohort) study is conducted and comment on the researchers' likely ability to acquire information on the confounders. Finally, assume that a cohort study having an internal control group and using personal interviews is conducted, and comment on the same issue.
3. Try to design a survey that can be used to assess an individual's lifetime occupational history, focusing on the nature of the person's work, the duration of employment in each job, and the major exposures he or she might have experienced in each job. Try administering the survey to several individuals. What are the relative advantages of a self-administered questionnaire versus an interviewer-administered questionnaire?

Immunity and Cancer/Diet and Cancer

1. Describe the various epidemiological research designs that have been used to assess whether etiological relationships between various forms of immunodeficiency and selected cancers exist and. Discuss the strengths and weaknesses of these epidemiological research designs.
2. Discuss the biological mechanisms that may explain the high incidence of certain cancers among patients diagnosed with AIDS.
3. Discuss the confounding variables that might have had a substantial effect on the findings of past studies of tonsillectomy and Hodgkin's disease. How did investigators deal with these confounding variables?
4. Discuss the strengths and weaknesses of past epidemiological studies of immunostimulation and cancer. Suggest a study design that would help avoid the major limitations of past studies.
5. For each of the following diet-cancer associations, provide some evidence in support of an etiologic hypothesis, and, if possible, also provide counter-evidence indicating why the association may not be causal: fiber and colon cancer, alcohol and breast cancer, and antioxidants and cancer in general.
6. Compare the methods of the "recent recall" with the "dietary record" in terms of their (1) potential validity and (2) consumer acceptability. Assume that the goal is to assess current dietary behavior rather than former behavior.
7. Identify one or more diets that have been promoted as protective against cancer (eg, macrobiotic diet, Mediterranean diet, etc.). Based on current epidemiological evidence, what characteristics of these diets, if any, would likely reduce cancer risk? In general terms, is there enough information in your opinion to publicize these diets as anticarcinogenic? Why or why not?

TEXTBOOK END OF CHAPTER QUESTIONS

Biomarkers and Genetic Factors and Cancer

1. Define marker of internal dose and describe two examples of internal dose markers that have been used in cancer research
2. Define marker of biologically effective dose and describe two examples of the use of this type of marker in cancer research
3. Define marker of preclinical biologic effect and describe two examples of the use of this type of marker in cancer research.
4. Define susceptibility marker and describe two examples of the use of this type of marker in cancer research.
5. Discuss two or three methodological issues that should be considered when developing a protocol for collecting biological specimens.
6. Discuss two to three methodological issues that should be considered when developing a plan to analyze and interpret data on gene-environment interactions.
7. Using lung cancer as an example, discuss the notion that many cancers are caused by the interaction of genetic susceptibility factors and environmental exposure.

Endogenous and Exogenous Hormones and Cancer

1. Describe the epidemiological evidence indicating that endogenous hormones play a role in the etiology of breast cancer.
2. There is substantial epidemiological evidence that a positive relationship exists between hypothesis that such a relationship exists.
3. Compare and contrast the risk factors for breast cancer with those for ovarian cancer.
4. As in the case of breast cancer, studies of migrant populations suggest that environmental factors play a major role in prostate cancer. Describe the findings of these studies and their implications for the etiology of these cancers.
5. Discuss the challenges associated with measuring endogenous hormones. Explain how and why these challenges differ between premenopausal women and postmenopausal women.
6. Discuss the challenges involved in designing a prospective study to examine the effect of exogenous hormones on cancer risk. Compare these to the challenges involved in designing a case-control study.
4. 7. Although DES is no longer in general use, discuss how its impact on breast cancer sheds light on the risk associated with exogenous hormones taken today.