NUTR 813 (259): Nutrition Epidemiology (3 credits)

Semester: Spring 2009
Time: 9:30-10:45 am Tuesday and Thursday
Room: 235 Rosenau Hall
Prerequisites: EPID 600 or 710 and BIOS 600 or equivalent or permission of instructor.
Required text: Nutritional Epidemiology, Walter Willett
2nd edition, Oxford University Press, 1998

Instructor: Dr. Ka He
Departments of Nutrition and Epidemiology
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Office hours: By appointment

Teaching assistants: Daisy Zamora (zamora@unc.edu) and Jesse Jones-Smith (jesjones@email.unc.edu)

Guest lecturers: Drs. Linda Adair, Viktor Bovbjerg, Elizabeth Meyer-Davis, Kari North, Barry Popkin, Jessie Satia, Anna Maria Sieg-Riz, June Stevens, and Dianne Ward (UNC-CH Departments of Nutrition and/or Epidemiology), Dr. Sheila Fleischhacker (IDOC Postdoctoral Scholar), Ms. Janne Boone-Heinonen (UNC Nutrition Epidemiology Doctoral Student) and Ms. Meg Mangan (Nutrition Epi Core Coordinator).

Course Objectives: This course introduces basic methods of dietary assessment, reviews various topics in nutrition epidemiology and teaches the skills needed for critical evaluation of the nutritional epidemiologic literature. Upon completion of this course, students are expected to be able to:

1. Describe and compare common methods of dietary assessment
2. Understand the nature of nutrient variation in the diet
3. Identify, describe, and compare study designs in nutritional epidemiological studies
4. Describe common methods of anthropometric assessment
5. Critically evaluate, summarize, present, and debate new research findings in the light of prior knowledge.

Grading:

Class participation:	10%
Assignments 1 & 2:	20% (10% each)
Midterm Exam:	25%
Debate presentation:	15%
Final Exam:	30%

DATE	TOPIC / READINGS / ASSIGNMENTS	LECTURER
Tuesday, January 13th	**Introduction to Nutritional Epidemiology** • Willett W. Nutritional Epidemiology, Chapter 1 *Optional Reading* • Tarasuk VS, Brooker AS. Interpreting epidemiologic studies of diet-disease relationships. J Nutr. 1997 Sep;127(9):1847-52. • Freudenheim JL. Study design and hypothesis testing: issues in the evaluation of evidence from research in nutritional epidemiology. Am J Clin Nutr. 1999 Jun;69(6):1315S-1321S.	Ka He
Thursday, January 15th	**Nutrition Epidemiology: Idea, Analysis and Interpretation** • Willett W. Nutrition Epidemiology, Chapter 1, pp 3-17 and Chapter 13, pp 321-346	Ka He

Tuesday, January 20th	**Overview of Dietary Assessment Methods** • Margetts and Nelson, Assessment of food composition and nutrient intake, Chapter 6 • Kumanyika SK. Epidemiology of what to eat in the 21st century. Epidemiol Rev. 2000;22(1):87-94.	Daisy Zamora
Thursday, January 22nd	**Variation in Diet** • Fahey MT, Sasaki S, Kobayashi M, Akabane M, Tsugane S. Seasonal misclassification error and magnitude of true between-person variation in dietary nutrient intake: a random coefficients analysis and implications for the Japan Public Health Center (JPHC) Cohort Study. Public Health Nutr. 2003 Jun;6(4):385-91. • Ortega MI, Valencia ME. Measuring the intakes of foods and nutrients of marginal populations in north-west Mexico. Public Health Nutr. 2002 Dec;5(6A):907-10. *Optional Reading* • Willett W. Nature of Variation in the Diet, Chapter 3, pp 33-49	Ka He
	Assignment: *Start 4-day food record on Friday Jan 23rd (data to be analyzed in class January 29th; due in class on February 5tht)*	
Tuesday, January 27th	**Food Frequency Questionnaires** • Willett W. Food Frequency Methods, Chapter 5 • Subar AF et al. Comparative validation of the Block, Willett, and National Cancer Institute food frequency questionnaires: The Eating at America's Table Study. Am J Epidemiol 2001 Dec 15;154(12):1089-99 • Schatzkin A, Kipnis V, Carroll RJ, Midthune D, Subar AF, Bingham S, Schoeller DA, Troiano RP, Freedman LS. A comparison of a food frequency questionnaire with a 24-hour recall for use in an epidemiological cohort study: results from the biomarker-based Observing Protein and Energy Nutrition (OPEN) study. Int J Epidemiol. 2003 Dec;32(6):1054-62.	Anna Maria Siega-Riz
	Assignment: *FFQ from NCI (due in class February 5tht)* http://riskfactor.cancer.gov/DHQ/forms/files/ncs/dhq1.2002.ncs.pdf (NOTE: print from URL above or from Blackboard site)	
Thursday, January 29th	**Lab on Computerized Diet Analysis: Demonstration of software for a 24-hr recall and a Nutrient Database** • Center for Nutrition Policy and Promotion home page http://www.usda.gov/cnpp/ • Interactive healthy eating index website http://www.cnpp.usda.gov/MyPyramidTracker.htm • Read contents of folder under course documents for January 29th on blackboard site before class	Jesse Jones-Smith, Daisy Zamora and Meg Mangan
	Take-home Exercise 1: Dietary Assessment Comparison Exercise *(Due in class on February 5th)*	

Tuesday, February 3rd	**Nutrient and Non-nutrient Databases** • Dwyer J, Picciano MF, Raiten DJ; National Health and Nutrition Examination Survey. Food and dietary supplement databases for What We Eat in America-NHANES. J Nutr. 2003 Feb;133(2):624S-34S • Haytowitz, D.B., Pehrsson, P.R., and Holden, J.M. (2008) The National Food and Nutrient Analysis Program: A Decade of Progress. Journal of Food Composition and Analysis 21(Supp. 1):S94-S102. • Haytowitz, DB, Pehrsson, PR, and Holden, JM. 2000. Adapting Methods for Determining Priorities for the Analysis of Foods in Diverse Populations. J Food Comp Anal, 13:425-433. • U.S. Department of Agriculture, Agricultural Research Service. Nutrient Data Laboratory Home Page, http://www.ars.usda.gov/nutrientdata	Anna Maria Siega-Riz
	In Class Assignment: Costs and Benefits of Different Dietary Assessment Methods *(Due at end of class period)*	Jesse Jones-Smith & Daisy Zamora
Thursday, February 5th	**Complexity of measuring diet and overall diet patterns** • Kant AK. Dietary Patterns and Health Outcomes. JADA 2004; 104:615-35. • Hu FB. Dietary pattern analysis: a new direction in nutritional epidemiology. Curr Opin Lipidol. 2002 Feb;13(1):3-9. *Optional Reading* • Dietary Guidelines 2005 Executive Summary	Anna Maria Siega-Riz
	Assignments Due: 4-Day Food Record; FFQ from NCI; Dietary Assessment Comparison Exercise	
Tuesday, February 10th	**Energy Balance and Adjustment** • Willet W. Nutrition Epidemiology, Chapter 11 • Kipnis, V., et al., *Interpretation of energy adjustment models for nutritional epidemiology.* Am J Epidemiol, 1993. **137**(12): p. 1376-80. **Optional Reading** • Willett, W.C., G.R. Howe, and L.H. Kushi, *Adjustment for total energy intake in epidemiologic studies.* Am J Clin Nutr, 1997. **65**(4 Suppl): p. 1220S-1228S; discussion 1229S-1231S. • Frary CD and Johnson RK (2004) Energy, in Krause's Food, Nutrition, & Diet Therapy, ed Mahan LK and Escott-Stump S. Sauders, Philadelphia. Page: 21-36	Jesse Jones-Smith
Thursday, February 12th	**Principle and Application of Biomarkers of Nutrient Intake** • Tworoger and Hankinson. Use of biomarkers in epidemiologic studies: minimizing the influence of measurement error in the study design and analysis. Cancer Causes Control. 17: 889-899, 2006. • Potischman. Biologic and methodologic issues for nutritional biomarkers. J. Nutr. 133: 875s-880s, 2003. *Optional Reading* • Willet W. Nutritional Epidemiology, Chapter 9 • Margetts and Nelson, Biochemical markers of nutrient intake, Chapter 7	Ka He

Tuesday, February 17th	**Understand the Literature of Nutrition Epidemiology** Part 1: Critically Navigating the Nutrition Epidemiology Literature Reading: http://www.nytimes.com/2007/09/16/magazine/16epidemiology-t.html?_r=1&oref=slogin Part 2: Bias in Nutrition Epidemiology Reading: TBA	Part 1: Jesse Jones-Smith Part 2: Daisy Zamora
Thursday, February 19th	**Translating Evidence to Practice** • Glasgow RE, Emmons KM. How can we increase translation of research into practice? Types of evidence needed. Annu Rev Public Health. 2007;28:413-33. • Serrano E, Anderson J, Chapman-Novakofski K. Not lost in translation: nutrition education, a critical component of translational research. J Nutr Educ Behav. 2007 May-Jun;39(3):164-70. *Optional Reading* • Fernald DH, Froshaug DB, Dickinson LM, Balasubramanian BA, Dodoo MS, Holtrop JS, Hung DY, Glasgow RE, Niebauer LJ, Green LA. Common measures, better outcomes (COMBO): a field test of brief health behavior measures in primary care. Am J Prev Med. 2008 Nov;35(5 Suppl):S414-22.	Viktor Bovbjerg
Tuesday, February 24th	**Anthropometry and Fat Patterning** • Willett W. Nutrition Epidemiology, Chapter 10	June Stevens
Thursday February 26th	**Physical Activity** • Ward DS, Evenson KR et al. Accelerometer use in physical activity: best practices and research recommendations. Medicine & Science in Sports & Exercise. 2005;37(11 suppl) S582-S588. • Bassett, DR. Validity and reliability issues in objective monitoring of physical activity. Research Quarterly for Exercise and Sport. 2000;71(2):30-36	Dianne Ward or Derek Hales
	Take-home Exercise 2: Measures of Body Composition *(Due in class on March 5th)*	
Tuesday March 3rd	**Dietary supplements** Rock CL. Multivitamin-multimineral supplements: who uses them? Am J Clin Nutr. 2007 Jan;85(1):277S-279S. Review. Park SY, Murphy SP, Martin CL, Kolonel LN. Nutrient intake from multivitamin/mineral supplements is similar among users from five ethnic groups: the Multiethnic Cohort Study. J Am Diet Assoc. 2008 Mar;108(3):529-33. Satia-Abouta J, Patterson RE, King IB, Stratton KL, Shattuck AL, Kristal AK, Potter JD, Thornquist MD, White E. Reliability and validity of self-report of vitamin and mineral supplement use in the VITamins And Lifestyle (VITAL) Study. American Journal of Epidemiology 2003; 157(10):944-954. Optional: Wollschlaeger B. The dietary supplement and health education act and supplements: dietary and nutritional supplements need no more regulations. Int J Toxicol. 2003 Sep-Oct;22(5):387-90	Jessie Satia
Thursday, March 5th	**Midterm Exam** ***Assignment Due:*** Measures of Body Composition exercise	Jesse Jones-Smith & Daisy Zamora

SPRING BREAK (March 10th & 12th)		
Tuesday, March 17th	**Obesity, Physical Activity and the Environment** • Sallis J, Glanz K. The role of the built environment in physical activity, eating, and obesity in childhood. The Future of Children. 2006; 16(1). • Popkin BM, Duffey K, Gorden-Larsen P. Environmental influences on food choice, physical activity and energy balance. Physiology&Behavior. 2005; 86:603-613. *Optional Reading* • Papas MA et al. The Built Environment and Obesity. Epidemiologic Reviews. 2007; 29:129-143. • Saelens BE, Sallis JF, Frank LD. Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. Ann Behav Med. 2003; 25:80-91	Janne Boone-Heinonen
Thursday, March 19th	**Nutrition and cancer readings** Boyle P, Boffetta P, Autier P. Diet, nutrition and cancer: public, media and scientific confusion. Ann Oncol. 2008 Oct;19(10):1665-7. Michels KB. The role of nutrition in cancer development and prevention. Int J Cancer. 2005 Mar 20;114(2):163-5. Review. Kaaks R, Riboli E. Epidemiologic studies of nutrition and cancer: let us not throw out the baby with the bath water. Int J Cancer. 2005 Sep 20;116(5):662-4. Pierce, J. P. et al. Influence of a diet very high in vegetables, fruit and fiber and low in fat on prognosis following treatment for breast cancer. The Women's Healthy Eating (WHEL) Randomized Trial. JAMA 2007; July 18; 298(3): 289-298. •	Jessie Satia
Tuesday, March 24th	**Nutrition and Cardiovascular Epidemiology** • Hu and Willett. Optimal diets for prevention of coronary heart disease. JAMA. 288: 2569-2578, 2002. • Ding and Mozaffarian. Optimal dietary habits for the prevention of stroke. Seminars in Neurology. 26 (1): 11-23, 2006.	Ka He
Thursday, March 26th	**Nutrition Epidemiology of Diabetes Mellitus and Metabolic Syndrome** • American Diabetes Association. Nutrition Recommendations and Interventions for Diabetes. Diabetes Care. 30: s48-s65, 2007.	Beth Mayer-Davis

Tuesday, March 31st	**National and International Nutrition Monitoring Databases** • US Dietary data sources: National Academy of Sciences draft report (2004). Enhancing the Data Infrastructure in Support of Food and Nutrition Programs, Research, and Decision Making • Popkin BM, Lu B, and Zhai F (2002) "Understanding the nutrition transition: measuring rapid dietary changes in transitional countries." Public Health Nutrition 5:947-53. • Federal Datasets on Food and Nutrition *Optional Reading* • Crane NT, Lewis CJ, Yetley EA. Do time trends in food supply levels of macronutrients reflect survey estimates of macronutrient intake? Am J Pub Health 1992;82:862-6	Barry Popkin
Thursday, April 2nd	**Diet-Gene Interactions** • Hunter, DJ. Gene-environment interactions in human diseases. Nature Reviews 2005 Apr;6:287-298. • Ordovas JM, Tai ES. Why study gene-enviroment interactions? Current Opinion in Lipidology 2008, 19:158–167.	Kari North
Tuesday, April 7th	**International Nutritional Epidemiologic Research** • Belkin, Lisa. The clues are in the blood. New York Times Magazine. April 26, 1998. • Solomons, NW et al. Dietary assessment tools for developing countries for use in multi-centric, collaborative protocols. Public Health Nutrition. 2002;5(6A):955-968 • Deurenberg P, Deurenberg-Yap, Guricci S. Asians are different from Caucasians and from each other in their body mass index/body fat per cent relationship. Obesity Reviews (2002);3:141-146.	Linda Adair
Thursday, April 9th	**Debate 1: Does portion size influence body weight?**	Ka He
Tuesday, April 14th	**Debate 2: Should the U.S. supply of infant formula be fortified with long-chain omega-3 polyunsaturated fatty acids?**	Ka He
Thursday, April 16th	**Debate 3: Is physical activity related to breast cancer?**	Ka He
	Take home final exam handed out	
Tuesday, April 21st	**Debate 4: Should soft drinks be taxed to prevent diabetes and obesity?**	Jesse Jones-Smith
Thursday, April 23rd	**Nutrition Epidemiology & Policy** Readings will be from National Summit on Obesity Prevention and Control to be published in Jour Med Law Ethics Feb 2009. **FINAL EXAM DUE in class**	Sheila Fleischhacker