Time: Tuesdays 12:30pm –3:15 pm

Location: A-122 Drachman Hall

Instructor: Elizabeth T. Jacobs, Ph.D. – Course Director 626-0341 jacobse@email.arizona.edu
University of Arizona Cancer Center – Room 1920

Office Hours: By appointment

Teaching Assistant: Not applicable

TA Office Hours: Not applicable

Course Description: Overview of the current issues and methods in assessing nutritional status in epidemiological studies. Issues and methods used in international studies and of chronic disease nutrition will be covered.

Course Prerequisites: EPID 573A. Statistics helpful.

Course Learning Objectives:
- Become familiar with basic concepts in nutritional epidemiology, focusing on methods used in the study of nutrition-disease associations
- Understand the strengths and limitations of different dietary and nutritional assessment methods.
- Become familiar with current trends in nutritional epidemiology.
- Learn how to read and interpret scientific literature in the field of nutritional epidemiology, and to prepare scientific reports on topics in nutritional epidemiology.

Epidemiology Competencies:

MPH Competencies:

1. Describe and summarize findings from the scientific literature.
   a. Topic Discussed: Lectures on Obesity, Nutrition and the Elderly, Nutritional Intervention Trials, Folate Fortification, Dietary Supplements, Vitamin D Adequacy
   b. Topic Assessed: Assignment 2, Designing a Nutritional Epidemiology study; Assignment 3, Folate Fortification Argument, Assignment 4, Reporting Nutritional Epidemiology Results, as well as during weekly discussion periods.

2. Compare the strengths and weaknesses of different epidemiological study designs and choose the most appropriate design for specific research questions.
   a. Topic Discussed: Lectures on Obesity, Nutrition and the Elderly, Nutritional Intervention Trials, Folate Fortification, Dietary Supplements, Vitamin D Adequacy
b. Topic Assessed: Assignment 2, Designing a Nutritional Epidemiology study; Assignment 3, Folate Fortification Argument, Assignment 4, Reporting Nutritional Epidemiology Results, as well as during weekly discussion periods.

**MS Competencies:**

1. **Selects appropriate study design for assessing the association between a given exposure and an outcome, understanding advantages, limitations, and potential biases.**
   a. Topic Discussed: Lectures on Obesity, Nutrition and the Elderly, Nutritional Intervention Trials, Folate Fortification, Dietary Supplements, Vitamin D

   b. Topic Assessed: Assignment 2, Designing a Nutritional Epidemiology study; Assignment 3, Folate Fortification Argument, Assignment 4, Reporting Nutritional Epidemiology Results, as well as during weekly discussion periods.

2. **Identifies potential sources of bias and their impact on study quality.**
   a. Topic Discussed: Lectures on Obesity, Nutrition and the Elderly, Nutritional Intervention Trials, Folate Fortification, Dietary Supplements, Vitamin D

   b. Topic Assessed: Assignment 2, Designing a Nutritional Epidemiology study; Assignment 3, Folate Fortification Argument, Assignment 4, Reporting Nutritional Epidemiology Results, as well as during weekly discussion periods.

**PhD Competencies:**

1. **Evaluates the integrity, comparability, and limitations of data to make inferences related to analyses and results.**
   a. Topic Discussed: Lectures on Dietary Intake Assessment, Introduction to Dietary Recommendations, Nutritional Surveillance Systems, Obesity, Nutrition and the Elderly, Nutritional Intervention Trials, Folate Fortification, Dietary Supplements, Vitamin D

   b. Topic Assessed: Assignment 2, Designing a Nutritional Epidemiology study; Assignment 3, Folate Fortification Argument, Assignment 4, Reporting Nutritional Epidemiology Results, as well as during weekly discussion periods.

**Course Notes:** Course materials can be found on the D2L course page.

**Recommended Texts/Readings:** See each class assignment.

**Course Requirements:**
Students are expected to attend each class and participate in class discussions. This is a very interactive class that requires input from all students. **All assignments are required to be completed on or before the due date, and are to be handed in during the class period. Please do NOT email assignments.** If you need to turn an assignment in early, please drop it off at my office prior to the scheduled class. **A penalty of one point will be deducted for each day that an assignment is late, with one additional point being deducted if it is turned in after the class period during which it is due.**

**Grading/Student Evaluation:** Class participation 30%; Assignments 70%

**Grading Scale:** 
A: 89.5-100
B: 79.5-89.4
C: 69.5-79.4
D: <69.5

**Class Attendance/Participation:**
All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean’s designee) will be honored. Please arrive in class on time. Late arrivals are distracting to other students as well as to the instructor, and may result in deduction of participation points.

**Course Schedule:**

**Jan. 15** Nutrition and Disease  
**Jan. 22** Dietary Intake Assessment

**Readings:**
*Volkert D.* Curr Opin Clin Nutr Metab Care. 2013 Sep;16(5):534-40

*Discussion:* You need to conduct a study of dietary fat intake and risk of breast cancer in women over the age of 60. What intake assessment tool will you choose?

**Jan. 29** Introduction to Dietary Recommendations & Establishment of Nutritional Guidelines

**Readings**
*Yates AA* J Nutr 131:(4s):1331s-1334s, 2001  
*Murphy SP* Public Health Nutr 5:843-849 2002  
*Goldberg et al.* J Am Diet Assoc 104(7): 1141-1147 2004

**Feb. 5** Nutritional Surveillance Systems and Interpretations of Nutritional Guidelines  
**ASSIGNMENT #1 DUE**

**Readings:**

**Feb. 12** The Epidemic of Obesity  
**Readings:**

*Discussion:* What strategies do you propose to combat obesity?
Feb. 19 Discussion of Flint Water Crisis Assignment  
Anthropometric and Body Composition Measurements  
ASSIGNMENT #2 DUE  
Dr. Jacobs  
Readings:  
Pak. Economics and Human Biology 2: 511-521, 2004  

Feb. 26 Nutrition Among the Elderly  
Dr. Jacobs  
Readings:  
Discussion: What are the best techniques to improve nutrition among the elderly in Tucson?  

Mar. 5 SPRING BREAK  

Mar. 12 Diet, Physical Activity and Cancer  
Dr. Kohler  

Mar. 19 International Nutrition  
Dr. Jacobs  
Readings  
Discussion: What programs would you propose for improving international food security? How would programs differ in the US vs. developing countries?  

Mar. 26 Part I: Communicating Science  
Part II: Nutritional Intervention Trials  
Dr. Jacobs  
Readings:  
Shelby A. Hum Vaccin Immunother. 2013 Aug;9(8):1795-801  
Bohannon, Chocolate for Weight Loss Abstract  
Discussion: Is the internet good or bad for communicating science? What are some strategies for improving how we talk about science to the general public?  

Apr. 2 Fortification of the Food Supply  
ASSIGNMENT #3 DUE  
Dr. Jacobs  
Readings:  
Discussion: Overall, do the benefits of folate fortification outweigh the potential risks?

Atta et al. AJPH January 2016: 106 (1): e24-e34.

Dr. Jacobs

Apr. 9 Dietary Supplements
Martinez-Sanz, Nutrients 2017, 9, 1093; doi:10.3390/nu9101093
Thomas et al., JAMA Internal Medicine, 173(5):386-388, 2013
Martinez et al., JNCI, 102 (10): 732-739, 2013

Discussion: Who should use dietary supplements? What is the best public health recommendation regarding supplement use?

Apr. 16 Vitamin D Adequacy vs. Danger of Sunlight Exposure (in-class debate) Drs. Foote & Jacobs

Readings:
McCullough et al. 2018: Journal of Steroid Biochemistry and Molecular Biology

Apr. 23 In-class presentations

Apr. 30 In-class presentations

Academic Integrity: Students are expected to abide by the University of Arizona Code of Academic Integrity found at http://w3.arizona.edu/~studpubs/policies/cacaint.htm. In this course, if plagiarism or other cheating is detected on an assignment, it will result in automatic failure for that assignment as well as a written warning and a report to the Section Head, the Dean of the College of Public Health, and the Dean of Students. A second offense will result in automatic course failure and a report to the Section Head, the Dean of the College of Public Health, and the Dean of Students. This policy is in place for this class because scientific writing is a fundamental skill at both the undergraduate and graduate level in this field, and for this course. Plagiarism or other cheating demonstrates that the skills necessary for this course have not been mastered by the student, and thus the assignment will be automatically failed on the first violation, and the class will be automatically failed on the second.

If you feel you are unsure as to what might constitute plagiarism, please see me after class and/or set up an appointment so we can discuss it. There are also numerous resources at the University of Arizona, including the writing lab, to help you understand and avoid plagiarism. Plagiarism can occur when a student copies text word-for-word without quoting, fails to paraphrase, or fails correctly reference materials used for preparing a written assignment. This includes fictitious or incorrect references.

Classroom Behavior: Students are expected to be familiar with the UA Policy on Disruptive Behavior in an Instructional Setting found at http://hr2.hr.arizona.edu/dos/pol_disrupt.htm and the Policy on Threatening Behavior by Students found at http://hr2.hr.arizona.edu/dos/pol_threat.htm. In this class, academic debate is encouraged; however, respect for everyone else in the classroom is expected.

Laptops and Electronic Devices: Laptops and other electronic devices can interfere with this class, so please turn them off. Phones can be left on vibrate if needed, but no phone calls or texting are permitted during class. Laptops should not be used during the class period, unless there is a documented need for their use.

5
ASSIGNMENTS

First, a word about class participation. As you can see from the grade breakdown, class participation is an imperative part of this class. Please come to each class session prepared to discuss the readings, as this will account for a full 30% of your grade.

Assignments: 70% of course grade

Assignment #1 Due February 5th, 2019  
10 points

Designing a Nutritional Epidemiology Study

This assignment will require the use of what you have learned so far about dietary intake assessment. This assignment should be four pages, maximum, with five references that were not used in class. You will design a study that will investigate the role of calcium intake on bone fractures. The following must be included in your study design:

1. Write your hypothesis
2. Describe your study design (case-control, cohort, clinical trial, etc.) and its strengths and limitations
3. Provide a rough estimate of population size you think you will need. You do not need to do a sample size calculation.
4. Explain how you will recruit your population
5. Describe how you will evaluate calcium intake
6. Give a general description of how you will analyze your results

Assignment #2 Due February 19th, 2019  
25 points

Flint Water Crisis
This assignment is meant to familiarize you with a present-day challenge to nutrition that is occurring in Flint, Michigan. This assignment will be a three-page paper (750 words maximum) that describes the cause of the problem in Flint, includes health outcomes that were observed in Flint, and provides suggestions for how a similar event in the future could be quickly and properly addressed.

Outline:
Introduction (causes, observations about the exposure), 1 page (250 words)
Health outcomes (levels of lead, any adverse health outcomes), 1 page (250 words)
Conclusions (plan for addressing any future major contamination event), 1 page (250 words)
Must include at least 5 peer-reviewed references published within the past five years, properly annotated

Assignment #3 Due April 2nd, 2019 15 points

Folate Fortification Argument

Write a three-page argument regarding the appropriateness/inappropriateness of folate fortification of the food supply to prevent neural-tube defects. For this assignment, you must choose a side (either folate fortification is good or it is bad). Please use 5 journal articles published in the past 5 years as references. The references need to be other than the ones that were assigned for class. You may use the class readings as references, but you will need the additional five.

Assignment #4 In-class presentations, April 23rd and April 30th, 2019 20 points

Reporting Nutritional Epidemiology Results

For this assignment, you and a partner will prepare a 20-minute presentation for the class, to include visual aids. The overall concept for this assignment is to find an article regarding nutritional epidemiology in the media (old timey newspaper or online), and to critique its accuracy. After finding the news article, you will then find the scientific article on which the news story was based in a scientific journal, and critique the article. Your presentation must include the following elements:

1. The title and basic idea of the news article
2. The rationale, objectives, methods, results, and conclusions of the scientific article
3. A comparison of the news article and the scientific article and whether the news article accurately reflected the scientific article
4. How the news article might have been improved
5. To reiterate, the article that you choose must be related to NUTRITIONAL EPIDEMIOLOGY. This can include clinical trials or observational studies, but it must be related to nutrition.
6. It is a good idea to have a fairly recent article, within the last calendar year
7. If you can find discussions of the article online you can add that information to your presentation.
8. BRING YOUR NEWS ARTICLE TO ME NO LATER THAN 2 WEEKS BEFORE YOUR PRESENTATION FOR APPROVAL. This is to ensure that no two groups present on the same article and thereby put everyone to sleep.

Your presentation will be followed by a 5-minute question and answer period. Please bring your presentation on a USB drive or have it ready on Prezi or similar.