

**NFS 1224 H S      Nutritional Epidemiology**  
January to April, 2021

Time and Location:

Thursdays 10am – 1pm, live on Zoom

Instructor:

**Anthony Hanley**

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Office hours:            By appointment

Text(s) and readings:

1. Main Text:

Willett W. Nutritional Epidemiology, Third Edition, Oxford University Press, 2013

2. Supplementary Text:

Margetts B and Nelson M. Design Concepts in Nutritional Epidemiology, Second Edition. Oxford University Press, 1997.

3. Additional readings will be assigned

Pre- / Co-requisites:

Introductory epidemiology and introductory biostatistics, or permission of the instructor.

Evaluation:

1. Protocol outline	15%	(due: Feb 11 <sup>th</sup> )*
2. Presentation and critique of journal paper	30%	(due: Feb 25 <sup>th</sup> / Mar 4 <sup>th</sup> )
3. Oral presentation of protocol and discussion	15%	(due: Mar 25 <sup>th</sup> , Apr 1 <sup>st</sup> /8 <sup>th</sup> )
4. Written protocol	40%	(due: April 16 <sup>th</sup> )

*\*(Returned by February 25<sup>th</sup>; Drop date = March 1<sup>st</sup>)*

Objective:

The overall objective of this course is to provide students with a critical understanding of theoretical and practical considerations in the conduct of epidemiologic research related to nutrition. The focus will be on observational studies of the role of diet and nutrition in chronic disease (as opposed to food-borne infectious disease outbreaks and associated issues, or under-nutrition). The material will have a strong methodological emphasis and is intended for graduate students with an interest in understanding how epidemiologic studies of diet and chronic disease are conducted. Specifically, students will be expected to gain a critical understanding of the design, conduct, analysis and interpretation of nutritional epidemiologic studies, including the usual methods applied for assessment of this exposure, familiarity with methodological issues related to nutritional epidemiologic studies such as the appropriateness of various study designs for specific research questions, and issues regarding data analysis and interpretation.

## Timetable:

<b>Wk</b>	<b>Date</b>	<b>Topic</b>	<b>Speaker</b>
1	January 14	- Introduction and overview - General considerations - Overview of epidemiology	Hanley
2	January 21	- Overview of epidemiology (con't) - Overview of nutritional epidemiology - Nature of variation in diet	Hanley
3	January 28	- Food records and 24-hour recalls - Food frequency questionnaires (design, validity, reproducibility)	Hanley
4	February 4	- Biomarkers	Hanley
5	February 11	- Data analysis and interpretation  → <b>NOTE: Protocol outlines due</b> ←	Hanley
6	February 18	***** <b>Reading Week</b> *****  ( <u>no class</u> but I will be available to meet with groups to discuss protocol questions)	(Hanley / students)
7	February 25	<b>Journal paper critiques</b> (week 1)  → <b>NOTE: Protocol outlines returned</b> ←	Students
8	March 4	<b>Journal paper critiques</b> (week 2)	Students
9	March 11	- Randomized controlled trials with nutritional interventions – special considerations	<b>Lisa Martin</b>
10	March 18	***** <b>Presentation Preparation</b> *****  ( <u>no class</u> but I will be available to meet with groups to discuss protocol questions)	(Hanley / students)
11	March 25	<b>Student protocol presentations</b>	Students
12	April 1	<b>Student protocol presentations</b>	Students
13	April 8	<b>Student protocol presentations</b>	Students
	April 16	→ <b>NOTE: Final protocols due</b> ←	Students

## Readings

<b>Wk</b>	<b>Date</b>	<b>Topic</b>	<b>Reading</b>
1	January 14	- Introduction and overview - General considerations - Overview of epidemiology	Willett Ch. 1-3 Supplementary: Margetts Ch 1
2	January 21	- Overview of epidemiology (con't) - Overview of nutritional epidemiology - Nature of variation in diet	
3	January 28	- Food records and 24-hour recalls - Food frequency questionnaires (design, validity, reproducibility)	Willett Ch, 4-7 Supplementary: Margetts Ch 5, 6, 8 (plus assigned readings)
4	February 4	- Biomarkers	Willett Ch 8 (plus assigned readings)
5	February 11	- Data analysis and interpretation	Willett Ch 13
6	February 18	<b>***** Reading Week *****</b> <b>*** No class ***</b>	
7	February 25	<b>Journal paper critiques</b>	To be assigned
8	March 4	<b>Journal paper critiques</b>	To be assigned
9	March 11	- Randomized controlled trials with nutritional interventions – special considerations	To be assigned
10	March 18	<b>*** Presentation Preparation ***</b> <b>*** No class ***</b>	
11	March 25	<b>Student protocol presentations</b>	
12	April 1	<b>Student protocol presentations</b>	
13	April 8	<b>Student protocol presentations</b>	
	April 16	<b>Final protocols</b>	

## Assignments

### 1. Protocol outline **15%** **(due: Feb 11<sup>th</sup>)**

In 1 single-spaced page (excluding references), provide an outline of your protocol, including the rationale and background information, objectives of the proposed study, and an outline of the study design and methods to be used. The intention of this assignment is to help you begin thinking about what will be needed for the full protocol - due at the end of the course.

The protocol will describe **an analytic observational study in nutritional epidemiology** (eligible designs will be outlined in an early class) and you will apply the nutritional epidemiology methods described in the course. Do not select a design that has a close relationship to your current thesis or recent work in which you've been involved. Students may be required to complete this work in groups, depending on course enrollment (to be confirmed). Submit an electronic copy (.docx to allow for comments).

### 2. Presentation and critique of journal paper **30%** **(Feb 25<sup>th</sup> and Mar 4<sup>th</sup>)**

Select a paper on the association of diet and chronic disease from a peer-reviewed journal and present a critical evaluation of the paper to the class. Include background to the problem and a critical analysis of methods used and the presentation and interpretation of results. Describe strengths, weaknesses, potential alternatives to the study design, measurement methods, and analytic approaches. Each presenting group should include 1 or 2 final slides listing and justifying the 5 most important things that could be done to improve the research project presented in the paper. A full critique will likely require reading other literature related to methods in your paper!

The paper should be a recent report (published in last 5 years) from **an analytical observational study in nutritional epidemiology**. Eligible study designs will be outlined in an early class. Approval of the paper by the instructor ahead of time is required. Do not select a paper that 1) is from this department, 2) has a close relationship to your current thesis or recent work in which you've been involved, or 3) does not use a **population-based** epidemiologic approach.

Each presentation will be 60 minutes (30 min presentation, 30 min for discussion and questions from class). Please email your slide handouts (full page) as well as a 1-page hand-in describing and justifying your 5 study improvements to the instructor.

All students are to read all presented papers and be prepared with questions, so please circulate the .pdf to the class at least one week in advance. Presentations will be done in groups (size to be confirmed).

### 3. Oral presentation of protocol and discussion **15%** **(due: Mar 25<sup>th</sup>, April 1<sup>st</sup> / 8<sup>th</sup>)**

For the first 30 minutes of the session, give a brief presentation of your protocol, including rationale / background information, objectives of the proposed study, and methods that you propose to use. Next, present any challenges or questions that you have regarding design, methods, analysis, etc. Come prepared with topics for discussion, options that you are considering, and specific questions for the class. The intention of these sessions is for you to obtain advice and feedback during the discussion / question period which will help to develop refinements of the final protocol. Duration of the presentations is 60 minutes (30 min for the presentation, 30 min for discussion and questions from the class), although this will be confirmed early in the term. Students may be required to complete this work in groups, depending on course enrollment (to be confirmed). Please email your slide handouts (full page) to the instructor.

#### **4. Written protocol**

**40%**

**(due: April 16<sup>th</sup>)**

Your protocol should describe an **analytical observational study**. Include a brief background to the problem including the rationale for your proposed study; the specific objectives of your study and hypotheses and/or research questions to be addressed; details regarding the methods including study design, measurement of outcome, main exposure variables and confounders; and an outline of the analytic approach. Maximum length – 5 single-spaced pages of text (1 pg. for research gaps and objectives/hypotheses, and 4 pgs. for methods – this does not include references, tables, figures).

Again, it is important that you **apply the nutritional epidemiology methods described in the course**. Do not select a design that has a close relationship to your current thesis or recent work in which you've been involved. Be sure to specify reasons for choosing your selected design and measurement methods, including strengths, limitations, and why potential alternatives were not chosen. Consider methodological features described in the STROBE guidelines. Students may be required to complete this work in groups, depending on course enrollment (to be confirmed). Submit an electronic and a paper copy.

## **Marking Scheme**

### **1. Protocol outline**

- Background / rationale 25%
- Identification of research gaps and statement of objectives 25%
- Consideration of: potential designs, assessment of exposure and outcome measures, analyses, etc 50%

*\* NOTE: this assignment is meant to help you get started on thinking about the topic for your full protocol, so it is not necessary that things be cast in stone at this point. Rather, you should demonstrate that you have been thinking about key issues in design, measurement, etc.*

### **2. Presentation and critique of journal paper**

- Quality of critique (inclusion of components identified in assignment description, consideration of additional literature, clarity of presentation, etc.) 50%
- Identification and justification of major study improvements 25%
- Defense (answering questions) 25%

### **3. Oral presentation of protocol**

- Quality of presentation (inclusion of components identified in assignment description, consideration of additional literature, clarity of presentation, etc.) 50%
- Preparedness for and encouragement of discussion, including identification of issues, consideration of alternatives, managing feedback 50%

### **4. Written protocol**

- Background / rationale, identification of research gaps and statement of objectives 15%
- Rationale for selecting: specific design, exposure and outcome measures, analytic approach. Discussion of strengths and limitations & potential problems 85%