

PUBH 6915

Nutrition Assessment
Fall, 2018

COURSE & CONTACT INFORMATION

Credits: 2

Meeting Day(s): Mondays

Meeting Time: 10:10 am – 12:15 pm

Meeting Place: Weaver-Densford Hall, Room W 2-120

Instructor: Lisa Harnack (Diet Assessment)

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Fax: 4-0315

Office Hours: By appointment

Office Location: WBOB 323

Instructor: Ellen W Demerath (Anthropometric Assessment, and Course Manager)

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Office Phone: 4-8231

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Office Hours: by appointment

Office Location: WBOB 455

Instructor: Mark Pereira (Biochemical Assessment)

Email: map@umm.edu

Office Phone: 4-4173

Fax: 4-0315

Office Hours: by appointment

Office Location: WBOB 326

COURSE DESCRIPTION

Dietary, biochemical, and anthropometric methods for assessing nutritional status are discussed in this class with a focus on the public health application of each.

COURSE PREREQUISITES

Public health nutrition major or instructor consent

COURSE GOALS & OBJECTIVES

1. To become familiar with the current best practices in dietary, biochemical, and anthropometric assessment of nutritional status.
2. To know the rationales, advantages, and disadvantages of these various approaches to nutritional assessment, including comparison of the reliability and validity, cost, burden, and feasibility of different methods in research and clinical practice.
3. To apply this knowledge to select nutrition assessment methods for hypothetical clinical and research situations.

METHODS OF INSTRUCTION AND WORK EXPECTATIONS

Regular class periods will be in a lecture and discussion format. Students are expected to attend all classes, complete all assignments, and to participate in discussions. PubH 6915 is a 2 credit course. The University expects that for each credit, you will spend a minimum of three hours per week attending class or comparable online activity, reading, studying, completing assignments, etc. over the course of a 15-week term. Thus, this course requires approximately 90 hours of effort spread over the course of the term in order to earn an average grade.

Learning Community

School of Public Health courses ask students to discuss frameworks, theory, policy, and more, often in the context of past and current events and policy debates. Many of our courses also ask students to work in teams or discussion groups. We do not come to our courses with identical backgrounds and experiences and building on what we already know about collaborating, listening, and engaging is critical to successful professional, academic, and scientific engagement with topics.

In this course, students are expected to engage with each other in respectful and thoughtful ways.

In group work, this can mean:

- Setting expectations with your groups about communication and response time during the first week of the semester (or as soon as groups are assigned) and contacting the TA or instructor if scheduling problems cannot be overcome.
- Setting clear deadlines and holding yourself and each other accountable.
- Determining the roles group members need to fulfill to successfully complete the project on time.
- Developing a rapport prior to beginning the project (what prior experience are you bringing to the project, what are your strengths as they apply to the project, what do you like to work on?)

In group discussion, this can mean:

- Respecting the identities and experiences of your classmates.
- Avoid broad statements and generalizations. Group discussions are another form of academic communication and responses to instructor questions in a group discussion are evaluated. Apply the same rigor to crafting discussion posts as you would for a paper.
- Consider your tone and language, especially when communicating in text format, as the lack of other cues can lead to misinterpretation.

Like other work in the course, all student to student communication is covered by the Student Conduct Code (<https://z.umn.edu/studentconduct>).

COURSE TEXT & READINGS

TEXTBOOK:

Principles of Nutritional Assessment, 2nd Edition. RS Gibson. Oxford University Press: New York, 2005 (required).

OTHER REQUIRED READINGS:

The following supplemental required readings to augment the text will be posted on the course Moodle site. To access the course website, go to <http://myu.umn.edu>, log in with your ID/password, click on the "My Courses" tab, and select "PubH 6915".

Unit 1: Dietary Assessment

Illner, AK, Freisling H, Boeing H, Huybrechts I, Crispim SP, Slimani N. Review and evaluation of innovative technologies for measuring diet in nutritional epidemiology. *Int J Epidemiol* 2012;41:1187-1203.

McKinnon RA, Reedy J, Morrisette MA, Lytle LA, Yaroch AL. Measures of the food environment: A compilation of the literature, 1990-2007. *Am J Prev Med* 2009;36(4S): S124-S133.

Yuan C, Spiegelman D, Rimm EB, Rosner BA, Stampfer MJ, Barnett JB, Chavarro JE, Rood JC, Harnack LJ, Sampson LK, Willett WC. Relative validity of nutrient intakes assessed by questionnaire, 24-hour recalls, and diet records compared with urinary recovery and plasma concentration biomarkers: findings for women. *Am J Epidemiol* 2018; 187(5): 1051-1063

Unit 2: Anthropometric Assessment

WHO Multicentre Growth Reference Study Group (a). WHO Child Growth Standards based on length/height, weight and age. *Acta Paediatr Suppl.* 2006 Apr;450:76-85.

WHO Multicentre Growth Reference Study Group (b). Reliability of anthropometric measurements in the WHO Multicentre Growth Reference Study. *Acta Paediatr Suppl.* 2006 Apr;450:38-46.

(Suggested Resource): University of Cambridge DAPA Measurement Toolkit (Diet, Anthropometric, and Physical Activity Assessment Toolkit). <http://dapa-toolkit.mrc.ac.uk/anthropometry/introduction/anthropometry>

Unit 3: Biochemical Assessment

Arab L. Biomarkers of fat and fatty acid intake. *J Nutr.* 2003;133:925S-932S.

Drakesmith H. Next-generation biomarkers for iron status. In Baetge, Dhawan, and Prentice (eds): *Next-Generation Nutritional Biomarkers to Guide Better Health Care*. Nestle Nutr. Inst. Workshop Ser, vol 84:59-69. Nestec Ltd., Vevey/S. Karger AG., Basel, 2016.

Pfeiffer CM, Johnson CL, Jain RB, et al. Trends in blood folate and vitamin B-12 concentrations in the United States, 1988-2004. *Am J Clin Nutr.* 2007; 86:718-27.

Prentice A, Goldberg GR, Schoenmakers I. Vitamin D across the lifecycle: physiology and biomarkers. *Am J Clin Nutr.* 2008 Aug;88(2):500S-506S.

Walsh JS, Evans AL, Bowles S, Naylor KE, Jones KS, Schoenmakers I, Jacques RM, Eastell R. Free 25-hydroxyvitamin D is low in obesity, but there are no adverse associations with bone health. *Am J Clin Nutr.* 2016;103:1465–71.

COURSE OUTLINE/WEEKLY SCHEDULE

Week	Topic/Lectures	Text and Readings	Activities/Assignments
Week 1 (no class) September 3			
Week 2 September 10	<ul style="list-style-type: none"> • Overview of dietary assessment methods • Food record and dietary recalls • Under-reporting 	<ul style="list-style-type: none"> • Text: pp 41-64, 149-196 	
Week 3 September 17	<ul style="list-style-type: none"> • Day-to-day variation in diet • Food frequency questionnaires 	<ul style="list-style-type: none"> • Text: pp 129-148 • Yuan et al., 2018 	
Week 4 September 24	<ul style="list-style-type: none"> • Practice choosing methods • Meal observation and plate waste • New methods under development 	<ul style="list-style-type: none"> • Text: pp 105-128 • Illner et al., 2012 	
Week 5 October 1	<ul style="list-style-type: none"> • Measure of the food environment • Practice choosing methods 	<ul style="list-style-type: none"> • McKinnon et al., 2009 	
Week 6 October 8	<ul style="list-style-type: none"> • Dietary supplement use assessment • Food and nutrient database considerations • Quality assurance methods 	<ul style="list-style-type: none"> • Text: pp 65-90 	<ul style="list-style-type: none"> • Assignment 1 Due
Week 7 October 15	<ul style="list-style-type: none"> • Rationale for anthropometric assessment • Anthropometric techniques 	<ul style="list-style-type: none"> • Text: Chapter 9, 10, 11 	
Week 8 October 22	<ul style="list-style-type: none"> • Reliability, Measurement Error • Anthropometric Reference Data 	<ul style="list-style-type: none"> • Text: Ch. 12 • WHO 2006a • WHO 2006b 	
Week 9 October 29	<ul style="list-style-type: none"> • Anthropometric Indicators • Interpretation of Results 	<ul style="list-style-type: none"> • Text: Ch. 13 	
Week 10 November 5	<ul style="list-style-type: none"> • Laboratory methods for body composition • Group work on Assignment 2 	<ul style="list-style-type: none"> • Text: Ch. 14 	
Week 11 November 12	<ul style="list-style-type: none"> • Biochemical Assessment 1a - Introduction to biochemical assessment • Biochemical Assessment 1b - Lipids 	<ul style="list-style-type: none"> • Text: 373-402 • Arab 	<ul style="list-style-type: none"> • Assignment 2 Due
Week 12 November 19	<ul style="list-style-type: none"> • Biochemical Assessment 2a - Vitamin A • Biochemical Assessment 2b - Iron 	<ul style="list-style-type: none"> • Text 477-497 • Text 443-476 • Drakesmith 	

Week 13 November 26	<ul style="list-style-type: none"> • Biochemical Assessment 3a - Folic acid and B₁₂ • Biochemical Assessment 3b - Zinc and Iodine 	<ul style="list-style-type: none"> • Text 595 - 640 • Text 711-731 • Text 749-766 • Pfeiffer 	
Week 14 December 3	<ul style="list-style-type: none"> • Biochemical Assessment 4a - Antioxidants: Carotenoids, vitamin E, vitamin C • Biochemical Assessments 4b - Vitamin D and calcium 	<ul style="list-style-type: none"> • Text 508-516 • Text 529-554 • Text 497-508 • Text 641-657 • Prentice • Walsh 	<ul style="list-style-type: none"> • Assignment 3 Due
Week 15 December 10	Using and interpreting nutritional biomarkers		
December 17	Final Exam (Take-Home)		Final Exam Due by Midnight

ASSIGNMENTS / EXAMINATIONS

1. A take-home series of short essay questions designed to build students' skills in selecting dietary assessment methods for specific objectives and population groups **(due Oct 8)**. *Submit on the Moodle site.*
2. With group members, create a guide to help practitioners select the best anthropometric techniques and carry them out appropriately for specific nutritional outcomes **(due Nov 5)**. *Submit on the Moodle site.*
3. A 3-page take-home evaluation of a journal article including biochemical/laboratory indicators **(due Dec 3)**. *Submit on the Moodle site*
4. A take-home final examination asking students to propose an integrated nutrition assessment plan, incorporating dietary, biochemical, and anthropometric methods in response to a hypothetical situation and problem **(due Dec. 17)**. The hypothetical situation will be provided to students on the last day of class. Scores on exams received after the due date will be reduced for each day late. No exams will be accepted more than three days late, and a zero will be assigned. *Submit on the Moodle site.*

SPH AND UNIVERSITY POLICIES & RESOURCES

The School of Public Health maintains up-to-date information about resources available to students, as well as formal course policies, on our website at www.sph.umn.edu/student-policies/. Students are expected to read and understand all policy information available at this link and are encouraged to make use of the resources available.

The University of Minnesota has official policies, including but not limited to the following:

- Grade definitions
- Scholastic dishonesty
- Makeup work for legitimate absences
- Student conduct code
- Sexual harassment, sexual assault, stalking and relationship violence
- Equity, diversity, equal employment opportunity, and affirmative action
- Disability services
- Academic freedom and responsibility

Resources available for students include:

- Confidential mental health services
- Disability accommodations
- Housing and financial instability resources
- Technology help
- Academic support

EVALUATION & GRADING

Evaluation

Grades for the three assignments for Units 1 – 3 will each comprise 20% of the final grade, and the final examination will be worth 40% toward the final grade.

Assignment 1:	30 points
Assignment 2:	30 points
Assignment 3:	30 points
Final Exam:	60 points
TOTAL:	150 points

Grading Scale

The University uses plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following, and you can expect the grade lines to be drawn as follows:

% In Class	Grade	GPA
93 - 100%	A	4.000
90 - 92%	A-	3.667
87 - 89%	B+	3.333

83 - 86%	B	3.000
80 - 82%	B-	2.667
77 - 79%	C+	2.333
73 - 76%	C	2.000
70 - 72%	C-	1.667
67 - 69%	D+	1.333
63 - 66%	D	1.000
< 62%	F	

- A = achievement that is outstanding relative to the level necessary to meet course requirements.
- B = achievement that is significantly above the level necessary to meet course requirements.
- C = achievement that meets the course requirements in every respect.
- D = achievement that is worthy of credit even though it fails to meet fully the course requirements.
- F = failure because work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I (Incomplete).
- S = achievement that is satisfactory, which is equivalent to a C- or better
- N = achievement that is not satisfactory and signifies that the work was either 1) completed but at a level that is not worthy of credit, or 2) not completed and there was no agreement between the instructor and student that the student would receive an I (Incomplete).

Evaluation/Grading Policy	Evaluation/Grading Policy Description
<p>Scholastic Dishonesty, Plagiarism, Cheating, etc.</p>	<p>You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis (As defined in the Student Conduct Code). For additional information, please see https://z.umn.edu/dishonesty</p> <p>The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: https://z.umn.edu/integrity.</p> <p>If you have additional questions, please clarify with your instructor. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.</p> <p>Indiana University offers a clear description of plagiarism and an online quiz to check your understanding (http://z.umn.edu/iuplagiarism).</p>
<p>Late Assignments</p>	<p>Points are deducted for late assignments (10% reduced each day they are late)</p>
<p>Attendance Requirements</p>	<p>Attendance at all lectures is required; Absences require permission of the unit instructor</p>
<p>Extra Credit</p>	<p>No extra credit opportunities are provided</p>

CEPH COMPETENCIES

Competency	Learning Objectives	Assessment Strategies
<p>Program Competency (PHN #2): Identify and apply current, evidence-based best practices for dietary, biochemical and/or anthropometric methods for assessing nutritional status.</p>	<p>1. To become familiar with the current best practices in dietary, biochemical, and anthropometric assessment of nutritional status. 2. To know the rationales, advantages, and disadvantages of these various approaches to nutritional assessment, including comparison of the reliability and validity, cost, burden, and feasibility of different methods in research and clinical practice.</p>	<p><u>Assignment #1</u>: Short essay responses to compare alternative approaches to dietary assessment for specific objectives and population groups</p> <p><u>Assignment #2</u>: Creation of a practitioner guide for conducting anthropometric assessment of common nutritional conditions</p> <p><u>Assignment #3</u>: Written evaluation of a journal article that describes biochemical/laboratory indicators of nutritional status</p>
<p>Program Competency (PHN #2): Identify and apply current, evidence-based best practices for dietary, biochemical and/or anthropometric methods for assessing nutritional status.</p>	<p>3. To apply this knowledge to select nutrition assessment methods for hypothetical clinical and research situations.</p>	<p><u>Final Exam</u>: Proposal of an integrated nutrition assessment plan, incorporating dietary, biochemical, and anthropometric methods in response to a hypothetical situation and problem</p>