



a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

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FNH 455 – Applied International Nutrition 2015-16 Winter Session Term 2

INSTRUCTOR: Jonathan Gorstein, PhD

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Office Hours: By email

TEACHING ASSISTANT: Aaron Cheng

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Office Hours: By appointment in FNH 215

Prerequisites: FNH 355

Meeting times and Location:

- Main Lecture: Tuesdays 1530-1720 in FNH 60 (Basement)
- Lab Sessions (TA Guided): Thursdays 1530-1650 in FNH 60 (Basement)



I. COURSE OVERVIEW

This class provides a comprehensive overview of nutrition in developing countries, with a focus on the importance of nutrition in the first 1,000 days of life - from conception through pregnancy and then the first two years of life. The course will emphasize the multi-dimensional causes of poor nutrition and the consequences of poor nutrition on health, cognition and development. The course will enable students to gain a general foundation on the global dimension of malnutrition and micronutrient deficiencies, through an introduction into the epidemiology of these different problems, their assessment and classification, and a description of current strategies being implemented to improve nutritional status in developing countries.

There will be an emphasis on the design and evaluation of intervention programs, and will include a description of current operational research being undertaken to address chronic undernutrition and micronutrient deficiencies, including vitamin A deficiency, iodine deficiency disorders and iron deficiency anemia. Case studies of large-scale national programs and smaller-scale projects will be used to describe successful interventions, as well as to underscore the challenge of convincing policy makers of the importance of nutrition given other health problems competing for resources and priority.

Students will be expected to complete all readings.

II. COURSE LEARNING OBJECTIVES

- Describe the global magnitude of nutritional problems and their consequences on physical growth, cognitive development, morbidity and mortality.
- Analyze the main determinants of malnutrition and nutrient deficiencies.
- Distinguish between macro- and micro-nutrient deficiencies (hunger vs. hidden hunger).
- List the main reasons for the critical importance of nutrition during the first 1000 days.
- Describe the work of governments, international agencies, foundations and NGOs in controlling malnutrition in developing countries.
- Describe the SUN Movement and the main success factors in the design, implementation and monitoring of national multi-sector programs to improve chronic undernutrition.

III. GRADING AND EVALUATION

Assignment	Grading Weight
Thursday Lab Session assignments and Clicker Participation	15%
Case Study Assignment	15%
Group Project	30%
Mid-term examination	20%
Final examination	20%

**Penalty for late or incomplete assignments: There is a 15% penalty each day for late submission for up to 3 days late and no grade for later submission.*

As per the UBC Calendar:

“Faculties, departments and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department or school. Grades are not official until they appear on a student's academic record.”

IV. ASSIGNMENTS

Weekly Lab Session assignments and Clicker Participation (15% of grade)

Lab Session Assignments: (10% of grade) Students will be expected to complete all readings and weekly lab session assignments. Weekly assignments are graded as Pass/Fail but must be submitted on time for a passing grade. Weekly assignments will consist of worksheets, which will be completed during Thursday's Lab Session. Students must complete assignments in class for a passing grade unless instructor approves permission for absence.

- Please bring your laptop to Lab Sessions

If you do not have a laptop please email the TA (aaron.cheng@ubc.ca)

Clicker Questions: (5% of grade) Students must participate in Clicker questions during class to receive full credit.

There will be no make-up assignments for either of these activities, unless medical documentation is provided.

Case Study Project (15% of grade) Due: 11:59 PM on Jan 25th.

Small groups of three students will be required to prepare responses to a key issues or topic which emerges from the case study (introduced in Week 1). These should be approximately 5 pages in length and will be discussed in the session on **January 26**.

- Paper must be: Double spaced, Times New Roman, 11 point font, with 1 inch margins

Group Project (30% of grade): Part 1 (5 page Group Paper); Part 2 (5 page Individual Paper); Part 3: 20 min Group Presentation)

Part I. (10% of total grade) Deadline for Topic Identification (ungraded): January 22nd. Due: 11:59 pm on February 14th.

Early in the course, students will be assigned to three person teams for the purpose of thoroughly investigating nutrition problems and solutions in regions of the world with different ecosystems and types of nutritional problems. Students will be assigned to groups to focus on one of the 14 countries with the highest burden of stunting (India, Nigeria, Pakistan, China, Indonesia, Bangladesh, Ethiopia, Dem. Rep. of Congo, Philippines, Tanzania, Egypt, Kenya, Uganda and Sudan).

Within each group, students will:

1. Identify the major nutritional and nutrition-related health problems in their country
2. From the range of problems, select the most important or compelling problem
3. Develop an appropriate ecological/theoretical model to illustrate the causes and consequences of the nutrition problem
4. Identify one current solution to the problem that you have selected and explain the benefits and drawbacks of this solution

Part 1 should be written up as a **5 page report by the group**. Groups will decide how to divide the tasks for the paper, and **the written product will be assigned a group grade**. The Teaching Assistant will be available to work with you as you prepare your topic and paper.

- Paper must be: Double spaced, Times New Roman, 11 point font, with 1 inch margins

Part II. Individual paper (10% of total grade) Due: 11:59 pm on March 4th.

Building on the Part I report, each student will identify an alternate intervention strategy to address the problem the group has identified. For example, one student might focus on nutritional supplementation of vulnerable subgroups, while another might propose a community kitchen or gardening project, and the third student proposes food fortification. Each student should write a rationale for selecting that strategy, identify the strengths and weaknesses of the strategy as compared to other types of interventions, and propose a specific plan for implementation. Be sure to relate the strategy to the specific circumstances identified for your country in Part I, and link the strategy to the ecological theoretical model. **This portion of the report (5 pages) will be individually graded.**

- Paper must be: Double spaced, Times New Roman, 11 point font, with 1 inch margins

Part III. (10% of total grade) Due: 11:59 pm on March 25th

The group should review and discuss individual strategies, and decide on the most feasible, most likely to succeed choice. This will form the focus of an oral presentation to the class. Group presentations will emulate a nutritional meeting in Geneva, at the World Health Organization Headquarters. Each group will present their country report to a panel of “experts” (consisting of the faculty, TA, and members of the class). The purpose of this report is to advocate for resource allocation to address the main nutrition problem identified for each country, using the final decided-upon strategy. The report should take the form of a 20-minute presentation. A portion of the presentation should be allocated to each group member. No written report is submitted for this section. In the presentations, you should:

1. Briefly explain your context and the nutritional landscape of the country. Describe the nutritional problem selected by the group, and explain why this problem was selected in view of the urgency of the problem in relation to other nutritional issues.
2. Present the ecological/theoretical model
3. Describe and the selected strategy and tell how it will be implemented. Compare your strategy to other approaches and describe what is novel or promising about your initiative. Describe how you will monitor and evaluate your initiative. Identify any potential risks or limitations.
4. Each country delegation will also be assigned to critique at least one other country’s presentation. Your delegation will be tasked with asking questions associated with the proposed plan. Marks will be allocated to both asking deep, thought provoking questions and answering the questions with appropriate responses

- Group Presentations March 29th and 31st, April 5th

Mid-term examination (20% of grade): February 11th

The mid-term examination will cover lecture and reading material covered up to and including material on February 9th. Exam will be a combination of multiple choice and open-ended questions.

Final examination (20% of grade): April 7th

The final examination will include lecture and reading material covered from the mid-term and through the remainder of the course. The final exam will not be cumulative, but does build on information from the beginning of the semester; general nutrition concepts from the first half of the course will be necessary. Exam will be a combination of multiple choice and open-ended questions.

V. TEXTBOOKS AND RESOURCES

The main background material for the class will be the 2013 Lancet Series on Maternal and Child

Nutrition: www.thelancet.com/series/maternal-and-child-nutrition:

Paper 1: Black RE, Victora CG, Walker SP et al. Maternal and child undernutrition and overweight in low-income and middle-income countries.

Paper 2: Bhutta ZA, Das JK, Rizvi A et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?

Paper 3: Ruel MT, Alderman H, and the Maternal and Child Nutrition Study Group. Nutrition sensitive interventions and programs: how can they help to accelerate progress in improving maternal and child nutrition?

Paper 4: Gillespie S, Haddad L, Mannar V et al. The politics of reducing malnutrition: building commitment and accelerating progress.

There will be a number of supplemental readings as detailed in the weekly schedule below.

VI. CLICKERS

- Clickers will be used throughout the course. These devices allow you to answer multiple choice questions posed by the instructor by pushing the letter of the answer you believe to be correct. Your participation will be recorded via radio frequency signal and will contribute to your grade. The frequency in FNH 60 is **AA**.
- You must register your clicker in order to be sure that your answers are recorded. Register your device by following the instructions on the course Connect page.

VII. ACADEMIC INTEGRITY

As per the UBC Calendar:

“Academic honesty is essential to the continued functioning of the University of British Columbia as an institution of higher learning and research. All UBC students are expected to behave as honest and responsible members of an academic community. Breach of those expectations or failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action.

It is the student's obligation to inform himself or herself of the applicable standards for academic honesty. Students must be aware that standards at the University of British Columbia may be different from those in secondary schools or at other institutions. If a student is in any doubt as to the standard of academic honesty in a particular course or assignment, then the student must consult with the instructor as soon as possible, and in no case should a student submit an assignment if the student is not clear on the relevant standard of academic honesty.

If an allegation is made against a student, the Registrar may place the student on academic hold until the President has made his or her final decision. When a student is placed on academic hold, the student is blocked from all activity in the Student Service Centre.”

VIII. ACCESS AND ACCOMMODATIONS

UBC is committed to providing an environment free of structural and attitudinal barriers for students with disabilities.

UBC's Access & Diversity provides a wide range of services and support for students with physical and/or learning disabilities, including mobility assistance, interpreting, captioning, and facilitating accommodations needed by students.

You're invited to make an appointment with a Diversity Advisor-Disability to discuss the academic accommodations and programs you're eligible for. Academic accommodations are determined on the basis of a student's documentation of disability and the essential learning outcomes of courses.

UBC's Crane Library provides Braille, audiobook, large print and electronic text materials.

IX. TOPIC OUTLINE AND READINGS

- Jan 5** **Lecture 1: Overview of course / Classification / Global prevalence / Determinants of Undernutrition**
- Overview of class
 - Terminology / Classification of undernutrition
 - Anthropometric measure of growth, international growth standards
 - Global patterns and trends of malnutrition – undernutrition, micronutrient deficiencies and obesity
 - Key determinants of undernutrition (introduction to conceptual framework)
 - Overview of group assignments
 - Introduction of case study
- Required Readings:**
- West KP, Caballero B, Black RE: **Nutrition**. International public health: diseases, programs, systems, and policies. Jones and Bartlett Learning. 2006. pp. 187-211
 - UNICEF. **Improving Child Nutrition – The Achievable Imperative for Global Progress**. New York, NY, 2013.
http://www.unicef.org/publications/files/Nutrition_Report_final_lo_res_8_April.pdf
Pages 1-16.
 - The State of Food Insecurity in the World. Meeting the 2015 international hunger targets: taking stock of uneven progress.
<http://www.fao.org/3/a-i4646e.pdf>
Pages 8-17

Jan 7 **Lab Session 1**

- Group Worksheet # 1: Due at end of class

Jan 12 **Lecture 2: Overview of Nutrition/ Basic principles of Nutrition through the first 1,000 days**

- Importance of nutrition in the first 1,000 days – from conception through pregnancy, infancy and early childhood
- Functional consequences of undernutrition and overnutrition
- Key interventions to address acute and chronic undernutrition

Required Readings:

- Paper 1: Black RE, Victora CG, Walker SP et al. Maternal and child undernutrition and overweight in low-income and middle-income countries.
- Paper 2: Bhutta ZA, Das JK, Rizvi A et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?

Jan 14**Lab Session 2**

- Group Worksheet # 2: Due at end of class
- Group work on Case Study

Jan 19**Lecture 3: Principles of Breastfeeding****Nutrition from conception through pregnancy, birth and beyond****Guest Lecturers:**

Dr. Mary Anne Mercer *University of Washington Global Health*

Kimberly Amundson, *Program for Appropriate Technology in Health (PATH)*
MSPH, RD

- Basic overview of maternal nutrition and breast milk – biological basis
- Importance of breastfeeding in ensuring optimal growth in infancy and early childhood
- Recommendations for breastfeeding
- International Code of Marketing Breastmilk Substitutes
- Basic overview of human milk banking

Required Readings:

- UNICEF. Nutrition: Breastfeeding:
http://www.unicef.org/nutrition/index_24824.html
- Alive & Thrive. Technical Focus: Breastfeeding:
<http://aliveandthrive.org/technical-focus/breastfeeding/>
http://aliveandthrive.org/wp-content/uploads/2014/11/Insight-Issue-1-Impact-of-early-initiation_English.pdf
- Strengthening Human Milk Banking – Section 1 only, the rest of the article is optional
<http://www.path.org/publications/detail.php?i=2433>
- UNICEF: Breast milk banks are a sound investment in the health of Brazil's premature babies
http://www.unicef.org/infobycountry/brazil_70944.html

Supplemental Readings:

- World Health Organization. UNICEF. Advocacy Strategy: Breastfeeding Advocacy Initiative- For the best start in life.
http://apps.who.int/iris/bitstream/10665/152891/1/WHO_NMH_NHD_15.1_eng.pdf

Deadlines:

- Group Project Topic Identification: Due 11:59 PM on Jan 22nd

Jan 21

Lab Session 3

- Group Worksheet # 3
- Work in groups to finalize Case Study
- Answer questions about Case Study

Deadlines:

- Case Study Due at 11:59 PM on Jan 25th

Jan 26

Lecture 4: Community Management of Acute Malnutrition/ Discussion of Case Study

- Acute malnutrition – causes and consequences
- Global prevalence of acute malnutrition
- Management of acute malnutrition – moving treatment from clinics to households

Required Readings:

- Collins S, Sadler K, Dent N, Khara T, Guerrero S, Myatt M, Saboya M, Walsh A. Key issues in the success of community-based management of severe malnutrition. *Food and Nutrition Bulletin* (2006) 27(3 Suppl):S49-82. – introduces the CTC model and is the seminal paper on the topic
- Ashworth, A. Efficacy and effectiveness of community-based treatment of severe malnutrition. *Food and Nutrition Bulletin* (2006) 27(3 Suppl):S24-48.
- Collins S. Treating severe acute malnutrition seriously. *Archives of Disease in Childhood* (2007) 92(5):453-61.

Recommended Readings:

- WHO. Guideline: **Updates on the management of severe acute malnutrition in infants and children.** WHO 2013.

Jan 28

Lab Session 4

- Group Worksheet # 4: Due at the end of class

Feb 2

Lecture 5: Maternal Nutrition and Global Funding for Nutrition

Guest Lecturer:

Dr. Scott Ickes – University of Washington School of Public Health

- Conducting formative research to inform maternal and child nutrition programs
- Different data types and their applications from qualitative and quantitative evaluation
- The "supply side" and "demand side" approaches to intervention delivery, and the role of each side in capacity building for nutrition programs
- Sustainable Livelihoods and Capabilities frameworks

Required Readings:

- Impact of lipid-based nutrient supplementation (LNS) on children's diet adequacy in Western Uganda. *Maternal & Child Nutrition* (2015), 11 (Suppl.), 163–178
- Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet* (2013). 387
- Nutrition and maternal, neonatal and child health. *Seminars in Perinatology*. 39(5), 361-372.

Feb 4

Lab Session 5

- Group Worksheet #5: Due at the end of class

Feb 9

Lecture 6: Micronutrient Deficiencies (vitamin A, iron) – Etiology, Consequences and Interventions

- Consequences and etiology of VAD and IDA
- Interventions – supplementation, fortification, dietary diversification
- Complementarities of program components – from legislation to monitoring to communication
- Challenges of large scale nutrition programs
- Public-private partnerships

Required Readings:

- GAIN. **Fortifying our Future – A Snapshot report on food fortification.** Geneva, Switzerland, 2015.

Feb 11

Lab Session 6

- Mid-term examination

Deadlines:

- Group Project Part I: Due 11:59 PM on Feb 14th

Feb 16

No Class: Reading Week

Feb 18

No Class: Reading Week

Feb 23

Lecture 7: Iodine Deficiency – Etiology, Consequences and Interventions

- Consequences and etiology of IDD
- Universal salt iodization
- Links to salt reduction and broader nutrition agenda

Required Readings:

- Zimmermann, M., Jooste, P.L. and Pandav, C. Iodine Deficiency Disorders. *Lancet* (2008) 372(9645):1251-62.
- Boelaert, K., Zimmermann, M. Iodine Deficiency and Thyroid Disorders. *Lancet Diabetes Endocrinol* (2015) 3:286-95

Feb 25

Lab Session 7

- Group Worksheet #6: Due at the end of class

March 1

Lecture 8: Interaction between Nutrition and Infection

Guest Lecturer:

Dr. Judd Walson ***University of Washington Departments of Global Health, Allergy and Infectious Diseases, Pediatrics, Epidemiology***

International AIDS Research and Training Program

- The importance of infection on nutrient utilization
- Growth and the human microbiome – the role of sanitation and hygiene

Required Readings:

- Guerrant RL et al. The impoverished gut--a triple burden of diarrhoea, stunting and chronic disease. *Nat. Rev. Gastroenterol. Hepatol.* 10, 220–229 (2013)
- Smith MI, Yatsunenko T, Manary MJ et al. Gut microbiomes of Malawian twin pairs discordant for kwashiorkor. *Science.* 2013 Feb 1;339(6119):548–54
- Prendergast AJ, Humphrey JH. The stunting syndrome in developing countries. *Paediatr Int Child Health.* 2014 Apr; 34(4): 250–265.

Mar 3

Lab Session 8

- Group Worksheet #7: Due at the end of class

Mar 8

Lecture 9: Issues related to Over Nutrition and Double-burden of Malnutrition

Guest Lecturer:

Dr. Rachel Nugent University of Washington Department of Global Health

Project Director – Disease Control Priorities Network

- Assessment and indicators – Criteria for the classification of overweight and obesity
- Main determinants of overnutrition – importance of poverty, diet, lifestyle and childhood undernutrition
- Dietary intake – issues of diet composition, cheap foods and the role of the food industry
- Consequences – chronic circulatory diseases, productivity
- Interventions –focus on innovative programs in Brazil and Mexico, diet and exercise, food regulations and labeling

Required Readings:

- Global Nutrition Report 2015. Chapter 7: Tracking Actions to Address Malnutrition in All its Forms.
<http://dcp-3.org/sites/default/files/resources/GNR%20Report.pdf>

Mar 10

Lab Session 9

- Group Worksheet #8: Due at the end of class

Mar 15

No Lecture

Required Viewings (link on Connect)

- Alive and Thrive: 3 Countries, 1 Mission
- Scaling Up Nutrition Movement
- SUN – Scaling Up Nutrition
- Scaling Up Nutrition Learning Route – Senegal

Mar 17

No Lab

- Aaron will hold office hours during the session in FNH 215

Mar 22

Lecture 10: TBA

Guest Lecturer:

*Shawn Baker,
MPH*

*Director, Nutrition, Global Development Program,
Bill and Melinda Gates Foundation*

Required Readings: TBA

Mar 24

Lecture 11: Scaling up of Nutrition (SUN) – Multi-sectoral approach to Nutrition programming at the National Level

- Global SUN Movement
- Integrated approach of sustaining improvements in nutrition
- Engagement and collaboration across sectors
- BMGF Nutrition Strategy: Country impact; Data, Analytics and Evidence; New solutions; Policy, Advocacy and Alignment and Food systems
- BMGF Nutrition Portfolio: Alive and Thrive, Harvest Plus (biofortification), Global Alliance for Improved Nutrition (Food fortification)

Required Reading:

- Scaling Up Nutrition Road Map Task Team. **Scaling up of Nutrition – A Framework for Action**. Brussels: SUN, 2010.

Mar 29/31

Student presentations

April 5 **Student presentations**

April 7 **Final examination**