

## **NUTC 203: Malnutrition Prevention and Response**

Friedman Graduate Certificate Program  
Friedman School of Nutrition Science and Policy  
Tufts University

**FALL 2018**

*September 4-December 9, 2018*

**Instructor:** Erin Boyd  
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**Office Hours:**  
By Appointment

**Textbooks:**  
None required

**Tufts Graduate Credit:**  
1.0

### **Course Description:**

The course will analyze different nutrition specific interventions and how to combine them in order to address malnutrition in all its forms. Emphasis will be on successful program design and delivery. Fundamentals on metrics and techniques to monitor and evaluate effectiveness will be covered. The themes of interventions reviewed in this course includes: Infant and Young Child Nutrition (IYCN); prevention and treatment of acute malnutrition, prevention of obesity, and micronutrient deficiency control. By the end of this course, students will be familiar with a wide range of nutrition interventions and how to combine them to address both underweight and overweight in international programs.

### **Course Objectives:**

By the end of the course, students will:

1. Conclude global recommendations in nutrition in relation to programmatic design and planning
2. Summarize the development, delivery and utilization of program responses
3. Explain constraints and issues associated with successful development and delivery and utilization of program responses
4. Explain the responses (emergency and non-emergency) to nutrition issues at the public health level including examples of successes and failures
5. Compare the impact of policy (global, national, local) on the successful implementation of programs

### **Assignments, Exams and Grade Evaluation:**

The final course grade is based on a combination of assessments, which include several weekly discussions related to topics covered in lectures and readings, two assignments and a final term paper. Participation at all levels is an essential element of this course. It is important to stay on schedule and

turn in all assignments on time. At the discretion of the instructor, points will be subtracted from grades earned on assignments, exams, or other deliverables that are incomplete or not completed on time.

Assignments	Due Date	% of Total Grade
Discussion forum participation	Weekly	20
Assignment 1- Needs Assessment and analysis (written paper, 10 pages double spaced)	October 7 <sup>th</sup>	20
Assignment 2- Program proposal development (defining objectives) (written paper, 8 pages double spaced)	November 4 <sup>th</sup>	20
Term paper- the term paper will build on Assignments 1 and 2 for a full proposal (maximum 20 pages, double spaced)	December 5 <sup>th</sup>	40
Total		100

**The following guidelines are used in evaluating course performance:**

1. Class assignments will be evaluated on the basis of completeness, originality, scientific soundness and relevance to the assigned topic, as well as participation as deemed appropriate by the course instructors.
2. Written work will be evaluated on the quality of thought, completeness and adherence to guidelines, scientific integrity, and ability to incorporate and communicate ideas and information effectively.
3. Adherence to instructions and guidelines of the assignments.
4. On-line discussion forums

The three assignments are all written papers and will build off one another. Assignment 1 (maximum 3500 words) will entail choosing a country and researching the nutrition situation of vulnerable groups, as well as existing interventions to address the situation. In Assignment 2 (maximum 3500 words), the nutrition problem that you choose to address in the country from Assignment 1 will be analyzed and objectives and modalities summarized. The final term paper (maximum 7500 words) will use the work from Assignments 1 and 2 to construct a full proposal to a hypothetical donor (of your choice) from an implementing partner of your choice.

**Late Policy**

Assignments must be submitted on or before the due date. Extensions will only be granted if requests are made at least 5 days before the due date. The grade for any assignment received after the due date will be reduced by 20% per day for up to three days.

**Communication Policy**

Students should seek out information themselves, from your peers, as well as on the weekly questions discussion forums. If you do not find your answer contact the instructor as soon as possible. Please do

not wait. Due to the potential time differences you need to plan time for the instructor to answer your question. The instructor and course manager will make every attempt to answer within 48 hours.

### **Technical Support**

All technical support questions should be directed to Friedman support staff at [friedmanonline@tufts.edu](mailto:friedmanonline@tufts.edu) or via skype, FriedmanOnline. Students should contact technical support for technical issues, Monday through Friday 9 am - 5pm (Eastern Time).

### **Class Participation**

Class participation for this course is an integral component of the learning agenda. Just as we would expect you to attend every lecture in a 'live' class, we expect everyone to participate in the discussion boards, described below.

**DISCUSSION BOARDS:** Every week, beginning with Week 1, a discussion board topic will be posted onto Trunk by Sunday night, 10pm EST. Please respond to the discussion board by the Thursday of that particular week before midnight (by 11:59pm EST). Discussion board topics may be a class activity relating to the lecture material, 'quiz'-like questions pertinent to the lecture material or current 'hot' topics/debates in nutrition programming community. The nature of the questions will require between 350-500 words response.

Read through your classmates' postings and please reply to at least two of your classmates by the Saturday (before midnight EST) of each of the aforementioned weeks (which gives you 2 days after the due date for the initial discussion board post to react to your classmate's posts).

We will track adherence to these participation requirements, provide general feedback each week, and will assign a grade at the end of the semester based on the quality and timeliness of these required contributions. There is a grading rubric available on trunk to help better define expectations.

## Weekly Class Activities and Schedule

### **Week 1:**

#### **Global Nutrition Response Recommendations**

In this class we will explore the primary nutrition issues facing the global community by examining data and debates surrounding global nutrition programs. The main conceptual models of causation, prevention and treatment discussed. Key social, cultural, political and economic factors that impact nutrition program development, delivery and success, and proposed analytic frameworks will be highlighted.

#### **Objectives:**

- Summarize global trends in nutrition programming
- Compare conceptual models explaining nutrition causality
- Debate current global recommendations for programming

#### **Required readings:**

- Lancet Series 2013 Executive Summary
- Black et al., Maternal and child undernutrition and overweight in low-income and middle-income countries, *Lancet*, 2013.
- Global Nutrition Report (2018) Nourishing the SDGs

#### **Online Discussion readings:**

- Morris, S., B. Cogill and R. Uauy. 2008. Effective International action Against undernutrition: why has it proven so difficult and what can be done to accelerate progress? *Lancet*: 371:608-621.
- Bryce J, Denise C, Ian D-H, David P, Per P-A. Maternal and Child undernutrition: effective action at national level. *Lancet*. 2008;371:510-26

### **Week 2:**

#### **Nutrition Program Development, Delivery and Utilization**

#### **Objectives:**

- Develop an understanding of program design basics
- Explain the concepts of the results framework and the logical framework models
- Understand the issues and constraints in the successful delivery and utilization of nutrition programs

#### **Required Readings:**

- Pelletier, D., et al., The Program Assessment Guide: An Approach for Structuring Contextual Knowledge and Experience to Improve the Design, Delivery, and Effectiveness of Nutrition Interventions. *Journal of Nutrition*, 2011. 141(11): p. 2084-2091.
- Tumilowicz, A., et al., Using implementation research for evidence-based programme development: a case study from Kenya. *Maternal & Child Nutrition*, 2015. 11: p. 1-5.

#### **Online Discussion Reading:**

- TBD

### Week 3:

#### Nutrition Program Planning, Delivery Metrics and Cost Effectiveness

##### Objectives:

- Assess advocacy, funding and leadership of the global nutrition agenda
- Compare how much interventions cost, and how this is measured
- Examine issues and constraints associated with program implementation, delivery and utilization
- Understand the role of metrics in strengthening the delivery and utilization of programs

##### Required Readings:

- Prof Zulfiqar A Bhutta PhD, Jai K Das MBA, Arjumand Rizvi MSc, Michelle F Gaffey MSc, Neff Walker PhD, Prof Susan Horton PhD, Prof Patrick Webb PhD, Prof Anna Lartey PhD, Prof Robert E Black PhD, Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet* - 3 August 2013 ( Vol. 382, Issue 9890, Pages 452-477)
- Webb, P., et al., *Measuring Nutrition Governance. Food and Nutrition Bulletin*, 2016. 37(4\_suppl): p. S170-S182.
- Hodge, J., et al., *Is There an Enabling Environment for Nutrition-Sensitive Agriculture in East Africa? Food and Nutrition Bulletin*, 2015. 36(4): p. 503-519.

##### Online Discussion Readings:

- Garrett J.L. Improving Results for Nutrition: A commentary on an agenda and the need for Implementation Research *J Nutr* March 1, 2009, Vol 138 no 3 646---650
- Verhoef M., Mulkins A., Kania A., Findlay---Reece B., Mior S. Identifying the barriers to conducting outcomes research in integrative health care clinic settings---a qualitative study *BMC Health Services Research* 2010, 10:14

### Week 4:

#### Micronutrient Deficiency Prevention and Control (Part 1)

##### Objectives:

- Explain micronutrient intervention policies and programs
- Plan different types of fortification:
  - National fortification
  - Household fortification
    - Multiple Micronutrient Powders (MNPs)- Sprinkles, RUFs, lozenges, syrups, candies, *atta* flour, etc.

##### Required Readings:

- Fiedler JL, Sanghvi TG., Saunders MK: The cost of micronutrient interventions: Policy Issues and Interventions. Technical Brief A2Z, USAID 7 pages
- Sazawal, S., Dhingra, P., Dhingra, U., Gupta, S., Iyengar, V., Menon, V. P., ... Black, R. E. (2014). Compliance with Home-based Fortification Strategies for Delivery of Iron and Zinc: Its Effect on Haematological and Growth Markers among 6-24 months Old Children in North India. *Journal of Health, Population, and Nutrition*, 32(2), 217–226.
- Darnton-Hill et. al. 2005. Micronutrient deficiencies and gender: social and economic costs. *Am. Jou. Clinical Nutrition*. 81 (5): 1198S-1205S.

- Stein, A. et. al. 2007. Plant breeding to control zinc deficiency in India: how cost-effective is biofortification? *Public Health Nutr.*: 10 (5): 492–501

**Online Discussion Reading:**

- Zambia refuses GMO foods
- <http://www.theepochtimes.com/n3/280808-gmos-a-global-debate-zambia-strongest-anti-gmo-stance-in-africa/>
- <http://www.nytimes.com/2002/08/30/world/between-famine-and-politics-zambians-starve.html>

**Week 5: Micronutrient Prevention and Control: Supplementation and Behavior Change Communication (Part II)**

**Objectives:**

- Describe different approaches to prevent and treat micronutrient deficiencies at a community and household level
- Compare approaches to improving micronutrient status: Dietary diversity, supplementation, fortification, biofortification

**Required readings:**

- Mason et al, 2014, Vitamin A Policies Need Rethinking.
- Guideline: Daily iron and folic acid supplementation in pregnant women. Geneva: World Health Organization; 2012  
[archived]([http://www.who.int/nutrition/publications/micronutrients/guidelines/daily\\_ifa\\_supp\\_pregnant\\_women/en/](http://www.who.int/nutrition/publications/micronutrients/guidelines/daily_ifa_supp_pregnant_women/en/))
- Wang J, Chang S, Zhao L, et al. Effectiveness of community-based complementary food supplement (Yingyangbao) distribution in children aged 6-23 months in poor areas in China. Wieringa F, ed. *PLoS ONE*. 2017;12(3):e0174302. doi:10.1371/journal.pone.0174302.
- Nepal brief from John Snow International

**Online Discussion Reading:**

- Latham M. Vitamin A Fiasco. World Public Health Nutrition

**Week 6: Infant and Young Child Feeding Part I- Breastfeeding and Complementary Feeding**

**Objectives:**

- Synthesize evidence on the importance of exclusive and continued breastfeeding, as well as good complementary feeding
- Demonstrate the different modalities through which to support infant and young child feeding

**Required Readings:**

- Why Invest in Breastfeeding (Lancet 2016)

**Online Discussion Readings:**

- None this week

**Week 7: Infant and Young Child Feeding Part II- Policies**

**Objectives:**

- Be familiar with the policies that exist to support optimal infant and young child nutrition

### **Required Readings:**

- FANTA 2008 Review of Incorporations of Essential Nutrition Actions into public Health Programs in Ethiopia.
- REACH 2008 Acting at Scale: Intervention Guide Breastfeeding and complementary feeding.
- Bhandari N et al. Use of multiple opportunities for improving feeding practices in under-tuos within child health programs. Health Policy Plan. 328-336.

### **Online discussion readings:**

- IYCF in emergencies

### **Week 8: Infant and Young Child Feeding Part III- Approaches**

#### **Objectives:**

- Critique different Infant and Young Child Feeding programs

### **Required Readings:**

- Guyon AB, Quinn AJ et al Implementing an integrated nutrition package at large scale in Madagascar: the essential nutrition actions framework. *Food and Nutrition Bulletin* 30:233-244, 2009
- Ten Steps DRC (Lanet, 2016)
- UNICEF 2010. The Community Infant and Young Child Feeding Counseling Package: Participant Materials. \*\* please skim so you are familiar\*\*
- WHO 2013. The Essential Nutrition Actions: improving maternal, newborn, infant and young child health and nutrition. \*\* please skim so you are familiar\*\*

### **Online Discussion Readings:**

- Charlton KE, Kawana BM, Hendriks MK. An assessment of the effectiveness of growth monitoring and promotion practices in the Lusaka district of Zambia. *Nutrition*. Volume 25, Issue 10, Pages 1035---1046 (October 2009)

### **Week 9: Prevention and Treatment of acute malnutrition; Community Management of Acute Malnutrition (CMAM)**

#### **Objectives:**

- Explain the basic concepts and rationale of preventing and treating acute malnutrition
- Summarize the protocols of CMAM and its implementation
- Justify the role of community mobilization in the successful implementation of CMAM

### **Required Readings:**

- Community-Based Management of Severe Acute Malnutrition: Joint Statement by the World Health Organization, the World Food Programme, the United Nations System Standing Committee on Nutrition and the United Nations Children’s Fund (2007).
- Sadler, K., Puett, C., Khetran, E., and Mothabbir, G. Briefing: Community Case Management of Severe Acute Malnutrition in Southern Bangladesh. 2010. Dhaka, Bangladesh, Save the Children, Bangladesh and Feinstein International Center, Medford USA.

**Online Discussion Readings:**

- Role of Community Mobilization in CTC Approach  
<http://www.youtube.com/watch?v=irhPJVPzhdg>
- BBC News piece 2010. Legal fight over Plumpy'nut, the hunger wonder---product  
<http://news.bbc.co.uk/2/hi/europe/8610427.stm>
- New York Times Magazine article Sept 2010. The Peanut Solution.

**Week 10: Stunting Reduction Packages****Objectives:**

- Explain the different interventions that can be bundled to mitigate stunting
- Understand the importance of the 1000 day window of opportunity

**Required Readings:**

- ENGINE Ethiopia Mid-term evaluation
- Huicho Luis et al., 2016, Child health and nutrition in Peru within an antipoverty political agenda: a Countdown to 2015 country case study, Lancet Global Health.
- WHO, WHA Global Nutrition Targets 2025: Stunting Policy Brief.

**Online Discussion Reading:**

- TBD

**Week 11: Nutrition Transition****Objectives:**

- Explain the issue of the double burden of disease
- Discriminate the changing landscape of nutrition programming in both urban and rural contexts
- Summarize the public health impact of nutrition transition, which countries are most affected and review of examples to address nutrition transition

**Required Reading:**

- Cecchini, M et al. 2010. Tackling of unhealthy diets, physical inactivity, and obesity: health effects and cost-effectiveness. Lancet 376:1775-1784.
- Grijalva-Eternod CS, Wells JCK, Cortina-Borja M, Salse-Ubach N, Tondeur MC, et al. (2012) The Double Burden of Obesity and Malnutrition in a Protracted Emergency Setting: A Cross-Sectional Study of Western Sahara Refugees. PLoS Med 9(10): e1001320.  
doi:10.1371/journal.pmed.1001320
- Ghosh et al, Understanding the complexity of under and over nutrition in Egypt, Feed the Future
- Misra, Obesity and the Metabolic Syndrome in Developing Countries, 2008
- Tanumihardjo, 2007, Poverty, Obesity, and Malnutrition: An International Perspective Recognizing the Paradox, Journal of the American Dietetic Association.
- WHO, 2012, Population based approaches to Childhood Obesity Prevention

**Online Discussion Reading:**

- Cuevas-Nasu L., Hernandez---Prado B., Shamah---Levy T., Monterrubio EA., del Carmen Morales--Ruan M., Moreno---Macias LB. Overweight and obesity in school children aged 5-11 years participating in food assistance programs in Mexico. Salud Publica Mex 2009 51 suppl 4:S630--637



## **Week 12: Monitoring and Evaluation**

### ***Objectives:***

- To be familiar with the conceptual framework for a project design
- To understand some key indicators for measuring changes in nutritional status
- To be familiar with indicators to measure infant and young child feeding practices

### **Required Readings:**

- WHO Infant and Young Child Feeding Indicators
- WHO and UNICEF Indicators to identify acute malnutrition
- Arimond M et al 2010. Simple food group diversity indicators predict micronutrient adequacy of women's diet in 5 diverse, resource-poor settings. J Nutri 140: 2059S-2069S.
- Monitoring and evaluation sample sheet
- Conceptual framework overview

### **Online discussion readings:**

- None this week, but you can fill out the conceptual framework for your final project