TIME: Wednesday 9:00 am-11:50 am
LOCATION: Drachman Hall A118
INSTRUCTOR: Halimatou Alaofe, PhD
    Office: Drachman Hall A208
    Office Hours: By appointment
    E-mail: halaofe@email.arizona.edu

Catalog Description
This course presents major nutritional problems that influence the health, survival, and developmental capacity of populations in low-and-middle income countries. It also covers approaches implemented at the household, community, national, and international levels to improve nutritional status. It explores the degree to which malnutrition can be prevented or reduced prior to achieving full economic development through nutrition sensitive and nutrition specific interventions that address the causes of malnutrition.

Course Description
This course will focus on current nutrition knowledge affecting health in underserved populations and in low-income countries. The impact of various nutrient inadequacies at different stages of the life cycle and their functional outcomes in terms of morbidity, psychological well-being, reproduction and growth will be highlighted. Students will become acquainted with the epidemiology of nutritional disease in the world. Programs and resources available to combat malnutrition will be evaluated. The role of world food production, food availability and supply in relation to nutrition and health will be discussed in the context of socioeconomic development and current political/economic policies and realities.

Course Prerequisites: Graduate student in a health-related field including biological or social sciences.

Course Objectives and Expected Learning Outcomes
At the end of this course, students will be able to:
    1. Analyze the causes and effects of the major nutritional deficiencies that are present in the world.
    2. Analyze the impact of biological and sociological factors that modify nutrition – infection interactions.
    3. Describe the nutrition transition and factors affecting it.
    4. Understand the role of women in nutrition, and how nutrition affects women.
    5. Determine the effect of governmental policies on nutritional status in low-income countries.
    6. Prioritize factors that need to be considered when developing public health programs to combat malnutrition in low-income countries.
 MPH Public Health Competencies Covered

<table>
<thead>
<tr>
<th>competency domain</th>
<th>learning outcomes</th>
<th>method of assessment</th>
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<tbody>
<tr>
<td>evidence-based approaches to public health</td>
<td>Interpret results of data analysis for public health research, policy or practice</td>
<td>Each student will present the methods used and outcomes for 2 different nutrition interventions.</td>
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<td>Analyze the strengths and weaknesses of intervention that address the major global health issues for women and children.</td>
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<td>planning &amp; management to promote health</td>
<td>Select methods to evaluate public health programs</td>
<td>Each student will be required to write a term paper to demonstrate how a nutrition strategy can change the nutritional status of a community, nation, or region. They will need to use empirical data to support what has worked and what has not worked. The paper will include a variety of data to develop final process and outcome statements along with recommendations regarding the strategy.</td>
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<td>Design a population-based policy, program, project or intervention</td>
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<td>communication</td>
<td>Communicate audience-appropriate public health content, both in writing and through oral presentation</td>
<td>Each student will be evaluated in three ways: class presentations, term paper and paper presentations</td>
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**Recommended Textbook**


This textbook is used as a background resource. We will be drawing upon additional resources. Please see the reading list posted on the course D2L site for additional recommended readings.

**How to Succeed in this Class**

1. Read the assignments.
2. Class participation is essential. Be prepared for class discussions. You will need to support your opinions, programs, and statements with facts from the readings and lectures.
3. You are welcome to email the instructor regarding class issues. Place “Student in HPS 560” in the subject line of your email. This will ensure that we read your email in a timely fashion.
4. Do not leave class early and attend every class.

**Late Policy**

All late assignments are subjects to a 3 point per day deduction, up to 4 days. Submissions beyond 4 days will not be accepted by the instructor. You may request an extension without a deduction ONLY if you have a documented illness or a documented family emergency. You must email the professor as soon as you are aware of either of these situations.

**Course Requirements and Evaluations**

This class will evaluate students in a variety of ways. There will two class presentations, a term paper that will culminate in the paper presentation at the end of the term.

**Class Presentations**

Each student will present the methods used and outcomes for one nutrition intervention. The presentations will include a PowerPoint, be for 15 minutes, and allow for 10 minutes of discussion.
Term Paper

You will be required to write an essay that is equivalent to a book chapter on a strategy for improving the nutritional status of a population within low and middle-income countries. Each chapter will be 15-20 double spaced pages with a 12 pt. Arial font without references, tables or charts. You should plan to have 20 to 50 references for the chapters and 3-7 graphics.

The chapter needs to demonstrate how a nutrition strategy can change the nutritional status of a community, nation, region or world. It needs to use empirical data to support what has worked and what has not worked. You chapter should include a variety of data to develop final process and outcome statements along with recommendations regarding the strategy. The data may come from experimental studies, demographic data, ethnographic studies, epidemiological studies and program evaluations. You will need to provide specific examples across the various nutrition topics that are part of this course. Your outcomes for determining success need to be nutritional outcomes (anthropometry and indicators of nutritional status). You need to conclude with making statements based on the evidence regarding what works and what does not work.

You are expected to meet with the instructor throughout the semester. The minimum should be at least twice for 30 minutes to go over the essay.

The topics for the chapters are on the following strategies, and how they are used to improve nutritional status of a community, nation or region:

1. Nutrient Supplementation Programs
2. Fortification Programs
3. Food Based Interventions
4. Nutrition Education Programs
5. Microfinance Programs
6. Community Development Programs
7. Economic Restructure
8. Agricultural Policies
9. Water Programs
10. Sanitation Programs
11. Local Food Production
12. Humanitarian Assistance in Crises Situations
13. Plant Production
14. School Based Programs

You must include the following sections in your chapters using the headings that are provided:

Introduction
Intervention Strategies
Community Programs
Nutritional Outcomes
Sustainability
Conclusions
Recommendations
References

Your reference format must be in the format for the journal Public Health Nutrition. You can get the complete information on this format at the following site: http://assets.cambridge.org/PHN/PHN_ifc.pdf. Place your graphs and tables after your references on separate pages. Number the pages and lines for each page. Place in
the header, the last names of the authors and the title for the chapter as printed above. Your own title can be longer and catchier.

You will sign up for the topics or a different topic with approval of the instructor. There will only be one chapter per topic. There are several deadlines to meet this assignment and feedback will be provided after each deadline. The deadlines are the following days before we meet for class:

Jan 29: Submit proposed topic
Feb 12: Provide list of potential references (25-30 references)
Feb 26: Provide initial outline and overall purpose of the paper.
Mar 25: Submit more detailed outline with some text and context to paper
Apr 08: Submit more detailed draft of paper
Apr 29: Chapter Due

Once all the chapters are written, you will be asked to sign a release to be an author for a publication (if your topic is relevant). You will then remain in contact with the instructor on the outcome of the publication.

**Paper Presentations**
Present the paper that you wrote to your classmates and professor. This will be a 15-minute presentation and allow for 5-10 minutes for questions and discussion.

**Grading/Student Evaluation**

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<td>Evaluation</td>
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<tr>
<td>Mid Term Exam</td>
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<tr>
<td>Term Paper</td>
<td>200</td>
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<tr>
<td>Paper Presentations</td>
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<tr>
<td>Final Exam</td>
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<td>B</td>
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<td>C</td>
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<td>D</td>
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<td>E</td>
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University policy regarding grades and grading systems is available at: [http://catalog.arizona.edu/policy-type/grade-policies](http://catalog.arizona.edu/policy-type/grade-policies)
Schedule of Class Topics

9:00am-10:20am: Lecture
10:30am-10:50am: In-class Activity
11:00am-11:50am: Class Presentations and Discussion

Jan 15: Introduction, Issues Associated with Nutrition in Low-income countries
Jan 22: Food Security: Measurements and Implications for Policy Development
Jan 29: Spectrum of malnutrition and nutritional requirements
        Paper Topic
Feb 5: Child Growth and Development
Feb 12: Iron Deficiency and Anemia: Causes, Consequences, and Solutions
        Provide Preliminary List of References for Paper
Feb 19: Vitamin A and Iodine deficiency
Feb 26: Zinc, Vitamin D, Essential Fatty Acids
        Provide Initial Paper Outline
Mar 04: Mid Term Exam
        Water, Sanitation, Infection and Nutritional Status
Mar 11: Spring break
Mar 18: Breastfeeding and Infant Feeding
Mar 25: Reproductive Health and Nutrition, Birth Outcomes and Developmental Disabilities
        Provide Detailed Draft of Paper Outline and/or rough draft
Apr 01: Nutrition and HIV/AIDS
Apr 08: Urbanization and Nutrition Transition
        Provide Draft Paper
Apr 15: Nutrition-specific and nutrition sensitive interventions
Apr 22: Economics of Interventions, Growing Capacity and Program Evaluation
Apr 29: Class Paper Presentations
        Term Paper Due
May 06: Class Paper Presentations
May 14: Final Exam (10:30 am – 12:30 pm)
Reading assignment

Jan 15: Introduction, Issues Associated with Nutrition in Low-income countries

Learning Objectives
1. Understand the perspective that will be presented in this class regarding international nutrition is a combination of biological and social sciences.
2. Be able to identify the primary differences for the nutritional problems that exist between developed and low-income countries.
3. Know the assignments that will be given during the semester.
4. Know the grading system that will be used for this class.
5. Identify the major nutritional issues that are currently present in the world.

Required Reading

Jan 22: Food Security: Measurements and Implications for Policy Development

Learning Objectives
1. Explain the difference between issues of food security and nutrition surveillance activities.
2. Compare how various intrahousehold factors affect food security.
3. Critic cultural and economic strategies for developing programs to decrease food insecurity within poor households.

Required Readings

Jan 29: Spectrum of Malnutrition and Nutritional Requirements

Learning Objectives
1. Explain how stages of nutritional status affect estimates of malnutrition.
2. Compare regional differences for the indicators of malnutrition.
3. Understand how nutrient intake recommendations have been established and how they are applied.

1. Understand energy density and nutrient density, how they can be increased and for which subgroups of the population they are most important.
2. Be able to explain the different level of risk associated with an intake below the estimated average requirement (EAR) and at or above the tolerable upper intake level (UL).
3. Be able to distinguish different strategies for improving nutrient intake and understand their roles, limitations, and complementarity.

Required Reading
Textbook: Chapter 5 The Spectrum of Malnutrition
Chapter 8 Nutritional Needs and Approaches to Meeting Them

Feb 05: Child Growth and Obesity

Learning Objectives
1. Describe the epidemiology of childhood malnutrition.
2. Explain the uses and limitations of growth charts.
3. Discriminate between the social and biological effects of malnutrition on child development.
4. Describe appropriate prevention and treatment programs for malnourished children under various social and economic situations.

Required Reading
Textbook: Chapter 6 Child Growth and Development

Feb 12: Iron Deficiency and Anemia: Causes, Consequences, and Solutions
Learning Objectives
1. Explain the regulation of iron metabolism
2. Define iron deficiency and explain at least three methods of assessment
3. Describe the epidemiology and main causes of iron deficiency in developing countries
4. Explain and substantiate the functional outcomes of iron deficiency
5. Explain key strategies to combat iron deficiency

Required Reading
Textbook: Chapter 10 Iron

Feb 19: Vitamin A and Iodine Deficiency
Learning Objectives
1. Describe the two major functions of vitamin A that underscore the nutrient’s public health importance.
2. Identify dietary sources of preformed vitamin A and provitamin A carotenoids.
3. Describe how vitamin A is absorbed and metabolized.
4. Describe the consequences of vitamin A deficiency for ocular health and survival.
5. Describe the epidemiology and the clinico-pathologic features of vitamin A deficiency in childhood and during the reproductive years.
6. Evaluate the current approaches for the prevention of vitamin A deficiency.
7. Describe the epidemiology of iodine nutrition on the global and regional level.
8. Compare the methods that can be used to determine the prevalence of iodine deficiency and how they may be best utilized during different stages of the life cycle.
9. Justify a strategy that can be used to prevent and treat childhood iodine deficiency in low-income countries.
10. Explain three strategies that can be used to prevent and treat iodine deficiency during pregnancy.

Required Reading
Textbook: Chapter 9 Vitamin A Deficiency
Chapter 12 Iodine

Feb 26: Zinc, Vitamin D, Essential Fatty Acids

Learning Objectives: Zinc
1. Identify the causes of zinc deficiency.
2. Describe the health consequences of zinc deficiency.
3. Understand the assessment of zinc deficiency.
4. Analyze intervention strategies to prevent zinc deficiency.

Learning Objectives: Vitamin D
1. Explain why rickets remains a major cause of infant and young child morbidity.
2. Define what the determinants of rickets are.
3. Evaluate why recommendations for vitamin D intake over the lifespan are unique compared with other nutrients.
4. Describe the clinical and subclinical effects of vitamin D deficiency.

Learning Objectives: Essential Fatty Acids
1. Review the role that essential fatty acids should have as part of nutrition interventions for low- and middle-income countries
2. Identify the dietary sources for essential fatty acids and their conversion to other n-3 and n-6 fatty acids
3. Describe how essential fatty acids are associated with birth outcomes
4. Explain the mechanisms for how essential fatty acids are associated with chronic diseases
5. Describe how dietary requirements for essential fatty acids can be determined.

**Required Reading**
Textbook: Chapter 11 Zinc Deficiency
Chapter 13 Nutritional Rickets and Vitamin D Deficiency
Chapter 14 Essential Fatty Acids

**March 04: Water, Sanitation, Infection and Nutritional Status**

**Learning Objectives**
1. Define WASH
2. Describe the links between WASH and undernutrition
   1. Identify recent global WASH and nutrition commitments that provide an important platform and the momentum to drive effective action.
3. Describes nutrition-sensitive WASH interventions that can be integrated into nutrition programs.
4. Identify useful indicators relevant to integrated WASH and nutrition efforts.

**Required Reading**

**Mar 18: Breastfeeding and Infant Feeding**

**Learning Objectives:**
1. Compare the advantages and disadvantages of extended breastfeeding.
2. Describe factors affecting, and related to exclusive breastfeeding and the start of the weaning period.
3. Compare the advantages and disadvantages of breastfeeding when a mother is infected with HIV.

**Required Reading**
Textbook: Chapter 15 The Role of Human and Other Milks in Preventing and Treating Undernutrition
Chapter 16 The Role of Breastfeeding Protection, Promotion and Support in a Developing World

**Mar 25: Reproductive Health and Nutrition, Birth Outcomes and Developmental Disabilities**

**Learning Objectives**
1. Define maternal nutrition
2. Explain the role of nutrition during pregnancy on birth outcomes: Preterm birth, Birth size, Neural tube defects and other congenital anomalies, Still birth and perinatal mortality.
3. Explain the importance of maternal nutrition before and during the peri-conceptional period

**Required Reading**
Textbook: Chapter 21 Reproductive Health and Nutrition
Chapter 22 Maternal Nutrition and Birth Outcomes
Chapter 23 Small for Gestational Age: Scale and Consequences for Mortality

**Apr 01: Nutrition and HIV/AIDS**

**Learning Objectives**
1. Describe the salient issues with Nutrition and the HIV management.
2. Analyze the Infant Feeding issues associated with the HIV epidemic in Africa.
3. Critic of nutrition intervention studies that have targeted people with HIV/AIDS.
4. Appropriately debate the role that women have on the nutrition status of people with HIV and those at risk for HIV.

**Required Readings**
Textbook: Chapter 17 Tuberculosis
Apr 08: Urbanization and Nutrition Transition

Learning Objectives
1. Review urban development history and its relationship with agriculture and food system development.
2. Explain how recent urbanization trends differ from the past and their implications for food and nutrition security.
3. Analyze how city size affects urban food systems, nutrition and poverty.
4. Identify what factors besides rural food production can affect urban nutrition.

Required Reading
Chapter 32 Urbanization, Food Security and Nutrition
Chapter 33 The Impact of Supermarkets on Nutrition and Nutrition Knowledge

Apr 15: Nutrition-specific and nutrition sensitive interventions

Learning Objectives
1. Explain the concept of SUN movement
2. Define nutrition-specific and nutrition sensitive interventions
3. Explain the importance of nutrition-specific and nutrition sensitive interventions

Required Reading
Textbook: Chapter 27 Evaluation of Nutrition-sensitive Programs
Chapter 28 Integrated Approaches to Health and Nutrition: Role of Communities

Apr 22: Economics of Interventions, Growing Capacity and Program Evaluation

Learning Objectives
1. Know which factors affect the external validity of RCTs in nutrition
2. Understand why context plays such an important role in the impact of most nutrition-specific interventions
3. Be able to propose a design for assessing how a specific intervention, implemented under real-life circumstances, contributes to improving nutritional status of a specific target group
4. Describe the costs of nutritional interventions
5. Prioritize nutritional interventions in terms of cost-effectiveness, and benefit-cost.
6. Explain the key challenges in evaluating nutrition-sensitive programs and ways to address them.
7. Identify the three components of a comprehensive evaluation (impact, process and cost), describe the primary uses of each of these components, and explain how to design these three components to evaluate a nutrition-sensitive program.
8. Illustrate how to use a program theory framework and associated program impact pathways in the design and evaluation of nutrition-sensitive interventions.
9. Analyze the types of challenges that program evaluators and implementers face when working together and explain how to address them in designing and carrying out the evaluation of complex nutrition-sensitive programs.

Required Reading
Textbook: Chapter 2 Economics of Nutritional Interventions
Chapter 3 Nutrition Evidence in Context
Chapter 4 Developing Capacity in Nutrition
ACADEMIC POLICIES

Required examinations, papers and projects: Specify the number of quizzes, examinations and papers. Identify the date and time of the final exam (or project due date), with links to the Final exam regulations: http://www.registrar.arizona.edu/staff/courses/final-exams?audience=staff&cat1=10

Absence and Class Attendance/Participation: (Expected attendance, participation levels)

In-person courses: The UA’s policy concerning class attendance, participation, and administrative drops is available at: http://catalog.arizona.edu/2015-16/policies/classatten.htm

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, http://policy.arizona.edu/human-resources/religiousaccommodation-policy.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored, http://uhap.web.arizona.edu/policy/appointed-personnel/7.04.02

Communications

You are responsible for reading emails sent to your UA account from your instructor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at: https://www.registrar.arizona.edu/personal-information/official-student-email-policy-use-email-official-correspondence-students

Accessibility and Accommodations:

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520-621-3268) to explore reasonable accommodation. If our class meets at a campus location: Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable. For additional information on Disability Resources and reasonable accommodations, please visit http://drc.arizona.edu/students

Code of Academic Integrity: Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercise must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity, available through the office of the UA Dean Students: http://deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity

Classroom Behavior: (Statement of expected behavior and respectful exchange of ideas):

Present policies to foster a positive learning environment, including use of cell phones, mobile devices, etc.)
Students are expected to be familiar with the UA Policy on Disruptive Student Behavior in an Instructional Setting found at: http://policy.arizona.edu/education-and-student-affairs/disruptivebehavior-instructional-setting

**Threatening Behavior Policy**

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to one’s self, http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students

**Nondiscrimination and Anti-harassment Policy**

The University of Arizona is committed to creating and maintaining an environment free of discrimination, http://policy.arizona.edu/humanresources/nondiscrimination-and-anti-harassment-policy

**UA Smoking and Tobacco Policy**

The purpose of this Policy is to establish the University of Arizona’s (University) commitment to protect the health of University faculty, staff, students, and visitors on its campuses and in its vehicles, http://policy.arizona.edu/ethics-and-conduct/smoking-and-tobacco-policy

**Syllabus Changes**

Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructors.

**Plagiarism: What counts as plagiarism?**

- Copying and pasting information from a web site or another source, and then revising it so that it sounds like your original idea.
- Doing an assignment/essay/take home test with a friend and then handing in separate assignments that contain the same ideas, language, phrases, etc.
- Quoting a passage without quotation marks or citations, so that it looks like your own.
- Paraphrasing a passage without citing it, so that it looks like your own.
- Hiring another person to do your work for you, or purchasing a paper through any of the on- or offline sources.

**Additional Resources for Students**

- UA Academic policies and procedures are available at: http://catalog.arizona.edu/2015-16/policies/aaindex.html
- Student Assistance and Advocacy information is available at: http://deanofstudents.arizona.edu/student-assistance/students/student-assistance