

Syllabus

Programme	Master of Public Health (MPH)
Module	Public Health Priority Interventions
Unit	Nutrition and Health
Instructor	Michael Habtu, BScN, MPH, PhD – UR School of Public Health (m.habtu@ur.ac.rw)
Period	01–09 October 2026
Mode of delivery	Blended: virtual (online) and physical (in-class) sessions

Course description

Nutrition and Health introduces MPH students to the science and practice of public health nutrition. The course starts from the basic concepts of food, nutrition, health and wellness, then builds the biological foundation: nutrients, digestion, absorption and metabolism, and how dietary reference intakes and energy requirements are set and applied to individuals and populations.

It then moves to the tools and frameworks used by public health practitioners: assessing nutritional status and diet, understanding the causes, determinants and consequences of malnutrition in all its forms (undernutrition, micronutrient deficiency and overnutrition), designing nutrition-specific and nutrition-sensitive interventions, and using nutrition surveillance to guide action.

Learning outcomes

By the end of the course, students will be able to:

- Define core nutrition and health concepts and justify nutrition as a public health priority.
- Describe nutrient functions, digestion and absorption, and apply dietary reference intakes and energy-requirement estimates.
- Understand, apply and interpret anthropometric, biochemical, clinical and dietary assessment methods.
- Analyze the causes, determinants and effects of malnutrition using the UNICEF conceptual framework.
- Distinguish and combine nutrition-specific, nutrition-sensitive and enabling interventions.
- Explain how nutrition surveillance systems work and how their data lead to action.
- Research, present and discuss evidence-based recommendations on a public health nutrition topic as part of a team.

Course plan and schedule

Day	Date	Content	Mode
Day 1	01/10/2026	Chapter 1: Introduction	Online class/lecture
Day 2	02/10/2026	Group assignment work	Physical, in-class lecture
Days 3 & 4	05–06/10/2026	Chapters 2, 3 and 4	Online class/lecture
Day 5	07/10/2026	Chapters 5, 6 and 7	Physical, in-class lecture
Day 6	08/10/2026	Group assignment work	Group work
Day 7	09/10/2026	Group presentation and discussion	In class

Course outline

Chapter	Topics	Learning objectives
Chapter 1: Introduction: Definitions and Concepts of Nutrition and Health	- Food, diet, nutrition, health and wellness: definitions and links - Public health vs community vs clinical nutrition - Global burden of malnutrition: stunting, wasting, overweight, hidden hunger; double and triple burden; - The healthful diet and food guides (MyPlate, DASH, Rwanda FBDG)	- Define and distinguish food, nutrition, health and wellness. - Differentiate public health, community and clinical nutrition. - Justify nutrition as a public health priority. - Describe a healthful diet.
Chapter 2: Nutrients and Digestion / Use	- Six nutrient classes; macronutrients vs micronutrients - Carbohydrates, proteins and fats: types and energy values (4, 4, 9 kcal/g) - Vitamins, minerals and water - Digestion and absorption along the gastrointestinal tract - Metabolism: fed vs fasted state	- Classify the six nutrient classes and explain their main functions. - Identify the main food sources of each nutrient. - Calculate energy from macronutrients. - Describe digestion and absorption of nutrients in the gut.



Chapter	Topics	Learning objectives
Chapter 3: Dietary Reference Intakes (DRIs) and Energy Requirements	• DRIs (EAR, RDA, AI, UL, EER, AMDR): derivation and uses • Energy requirements: BMR, PAL, total energy expenditure, EER • Planning intakes for individuals and populations • Needs in pregnancy, lactation, childhood and adolescence	• Define DRIs and explain how they are derived. • Apply DRIs to assess and plan intakes for individuals and populations. • Describe the components of energy expenditure and estimate energy needs. • Describe how requirements change across the life course.
Chapter 4: Assessment of Nutritional Status and Dietary Assessment	• Nutritional status and assessment: concepts, surveys, surveillance and screening • Anthropometry: BMI, MUAC, z-scores, WHO 2006 growth standards • Biochemical and clinical assessment • Dietary assessment: 24-hour recall, food frequency questionnaire, food record; measurement error • Dietary diversity and feeding indicators (MDD, MAD, MDD-W)	• Explain why and how nutritional status is assessed. • Apply anthropometric indicators and growth standards to interpret nutritional status. • Describe dietary assessment methods, their strengths and limitations, including measurement error. • Use dietary diversity and feeding indicators.
Chapter 5: Causes, Determinants and Effects of Malnutrition	• UNICEF framework: immediate, underlying and basic causes • Determinants: gender inequality, climate change, conflict, economic shocks • Malnutrition–infection cycle • Short- and long-term effects of under- and overnutrition (DOHaD) • Intergenerational cycle, economic cost and hidden hunger	• Explain the UNICEF framework and distinguish the three levels of causes. • Identify the key determinants of malnutrition. • Describe the malnutrition–infection cycle and how to break it. • Summarize the effects of malnutrition, its intergenerational cycle and economic cost.
Chapter 6: Nutrition Interventions: Nutrition- Specific vs Nutrition- Sensitive	• Community nutrition cycle: assessment, planning, implementation, evaluation • Nutrition-specific, nutrition-sensitive and enabling-environment actions • Four-pronged micronutrient approach, including biofortification • Multisectoral programmes and case studies (SUN, BFHI, CMAM, school feeding, cash transfers)	• Distinguish nutrition-specific, nutrition-sensitive and enabling interventions, with examples. • Describe the main life-course nutrition-specific interventions. • Compare the four micronutrient strategies. • Explain why combined, multisectoral action is needed to reduce stunting.

Chapter	Topics	Learning objectives
Chapter 7: Nutritional Surveillance	• Surveillance, monitoring, screening and surveys: definitions • Surveillance cycle and purposes • Types of systems: routine (HMIS), surveys (DHS, SMART), sentinel, early warning • Core indicators; challenges and strengthening systems	• Define and differentiate surveillance, monitoring, screening and surveys. • Explain the purposes and cycle of nutrition surveillance. • Describe the types and data sources of surveillance systems. • Discuss the challenges of surveillance and how to strengthen systems.

Assessments

Component	Description	Weight
Group assignment and presentation	Group work on an assigned topic; 20–30-minute presentation including discussion	40%
Quizzes	Short quizzes and interpretation tasks	20%
Final written examination	Short-answer, and case-based questions	40%
Total		100%

Key Sources

- UNICEF/WHO/World Bank Joint Child Malnutrition Estimates, 2025 edition.
- Black RE et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet, 2013 (series).
- Institute of Medicine / National Academies: Dietary Reference Intakes (including 2019 sodium and 2023 energy updates).
- FAO/WHO/UNU: Human energy requirements (2004) and protein and amino acid requirements (2007).
- WHO: recommendations on antenatal care (2016, 2018); WHO Child Growth Standards (2006).
- FAO: Minimum Dietary Diversity for Women (MDD-W) guidelines.
- Rwanda Demographic and Health Survey 2025 (Group Topic 7).
- Case studies: Bolsa Família (Brazil), Productive Safety Net Programme (Ethiopia), Integrated Child Development Services (India).