

Fundamentals of Food Systems

Course Code	Title of Course	Credit Hours
HND-116	Fundamentals of Food systems	3(3-0)

Learning outcomes:

Students will be able to:

- Define and explain the dimensions and determinants of food security.
- Gain insights into historical overview, components and significance of sustainable food systems.
- Evaluate impact of climate change, gender and youth mainstreaming on food, nutrition, and health
- Understand Pakistan Food System Dashboard (PFSD) and its utilization for data acquisition

Course Contents:

Food security: Definition, dimensions and determinants of food security, national and global food security trends, nutritional outcomes of food security, food security and human rights, youth and gender mainstreaming, regional challenges, and disparities; Food systems: Overview, definition, components and stakeholders of the food system, historical perspectives, pathways of food systems transformation; Drivers of food systems: Basics of socioeconomic, technological, innovation and policy drivers; Sustainable food systems: definition, significance, components i.e., environment, innovation, technologies, policies; Conventional and sustainable food production practices; Foods of plants and animal origin; Overview of food value chain: production, processing and distribution chain, food losses and waste; Food consumption: National and global dietary, nutrition and health trends, food consumption behaviors, economic aspects of food consumption; Challenges and issues in food systems: ethics, equity and food access, climate change; Climate change: Basics of climate change, impact of climate change on food, nutrition and health, adaptation and mitigation strategies; Food system dashboards: Introduction and importance, components of food system dashboard and databases, global and national food system dashboard, type of data, data sources and indicators; User interface elements: menus, filters, and introduction to data visualization tools, hands-on practice with visualization software.

Suggested Readings Text Books:

1. Galanakis, C. M. (Ed.). (2020). *Food Security and Nutrition*. Academic Press.
2. Marsden, T., & Morley, A. (2014). *Sustainable Food Systems: Building a New Paradigm*. Earthscan from Routledge.

Reference Books:

1. Future Food Systems - Exploring Global Production, Processing, Distribution and Consumption (1st edition), Yada, R.Y., Acker, R.V., Scanlon, M., Gray, D. 2024. Academic Press.

2. "The State of Food Security and Nutrition in the World 2023": Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum (Vol. 2023). Food & Agriculture Org.
3. Pakistan Food System Dashboard. Available at: <https://www.foodsystemsdashboard.org/countries/pak>; <https://www.foodsystemsdashboard.org/>
4. "Pakistan Food Systems Transformation Pathway, National Pathways for Food Systems Transformation in Pakistan" (A Strategic National Pathway Document), Ministry of National Food Security and Research (MNFSR) <https://summitdialogues.org/wp-content/uploads/2021/09/National-Pathways-for-Food-Systems-Transformation-in-Pakistan-Sep-15-2021.pdf>
5. "Food Systems in an Unequal World: Pesticides, Vegetables, and Agrarian Capitalism in Costa Rica" by Ryan E. Galt
6. "Food Systems for Sustainable Development: Responding to the Environmental and Resource Challenges" by Ruerd Ruben, Jeroen Candel, and Albert P. J. Mol
7. "The Global Food System: Issues and Solutions," edited by William D. Schanbacher
8. "Data Visualization: A Handbook for Data Driven Design" by Andy Kirk
9. "Achieving Food Security in Asia: Pragmatic Policies and Strategies" edited by Jelle Bruinsma (2017)
10. "Sustainable Food Systems in Southeast Asia" by Gerhard van den Top and Wolfram H. Dressler (2021)
11. "Transforming Food Systems for a Rising India" by Prabhu Pingali, Anaka Aiyar, Mathew Abraham, and Andaleeb Rahman (2019)
12. "The Global Food System: Issues and Solutions" edited by William D. Schanbacher (2020)
13. "Food Security and Nutrition in Pakistan: Strategic Review" by World Food Programme and Sustainable Development Policy Institute (SDPI) (2017)
14. "Agriculture and the Rural Economy in Pakistan: Issues, Outlooks, and Policy Priorities" edited by David J. Spielman, Sohail J. Malik, Paul Dorosh, and Nuzhat Ahmad (2016)