Tishk International University
Faculty of Applied Sciences
Nutrition and Dietetics Department
Principles of Food Science

Interdisciplinary Nature of Food Science

Marks Per Theory and Lab

Midterm = 60
Final = 40

Categories	Theory	LAB
Midterm	20	10
Seminar	5	-
Quiz	5	5
Report	-	5
Projects and Activity	5	5
Total	35	25
Final	25	15

Course Description

- Introduction to foods as chemical systems; structure-function relationships of water, protein, lipids, carbohydrates, minerals, and natural products in foods; food safety fundamentals; preservation methods and effects on food quality.

Seminar Topics

1. Introduction to Food Science: Scope and Importance
2. Principles of Food Preservation: Thermal and Non-Thermal Methods
3. Role of Microorganisms in Food Production and Spoilage
4. Nutrient Composition of Foods: Carbohydrates, Proteins, and Fats
5. Chemical Changes in Food During Processing
6. Techniques in Food Quality Assessment
7. Food Additives: Types, Benefits, and Risks
8. Role of Water Activity and pH in Food Stability
9. Food Packaging: Functions and Sustainability
10. The Science Behind Flavor and Aroma Development
11. Impact of Processing on Food Nutrition and Safety
12. Principles of Food Biotechnology
13. Emerging Food Trends: Functional Foods and Superfoods
14. Food Laws and Regulations: Ensuring Consumer Safety

Names

Bayan

Skar

Vana

Nura

Banav

Zahra

Mina

Ronya

Dalya

Lana

Rozhgar

Aryas

Ronya

Zhin

https://wheelofnames.com/

Outlines

- Food
- Food Science
- Food Technology
- Nutrition
- Nutrients
- Health and Health Dimensions

Learning Outcome

Understand the Combination of Disciplines in Food Science

Analyze the Role of Food Science in Solving Real-World Challenges

Apply Knowledge to Interdisciplinary Research or Industry Practices

Food: Products derived from plants or animals that can be taken into the body to yield energy and nutrients.

Food: may be defined as “anything eaten or drunk that meets the need for **energy**, **body building, regulation** and **protection** of the body to sustain life.

Sources of Food:

Plant-based:Fruits, vegetables, grains, nuts, seeds, and legumes.

Animal-based:Meat, fish, eggs, milk, and dairy products.

Other sources:Fungi: Mushrooms.

Food: may be considered as **a fuel** that supplies **energy** to the body to support **our daily activities and synthesize necessary materials** within the body.

Food composition: are considered as the major determinant of **human health and wellbeing**.

Food has been classified into numerous groups based on consumption pattern. The one such classification categorizes them into:

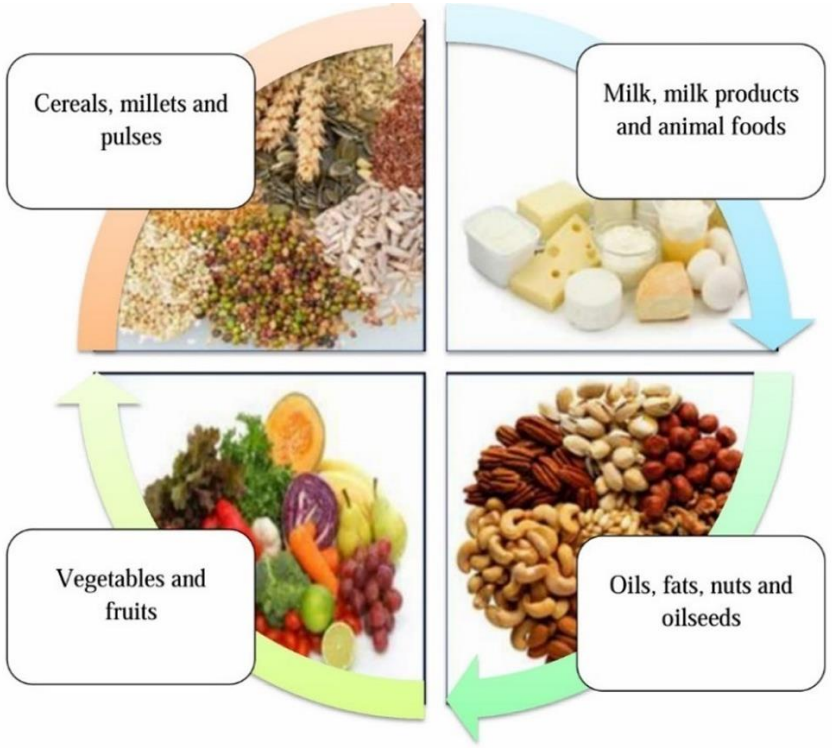


Fig. 1.1 Basic four food groups

Fig. 1.2 Basic five food groups

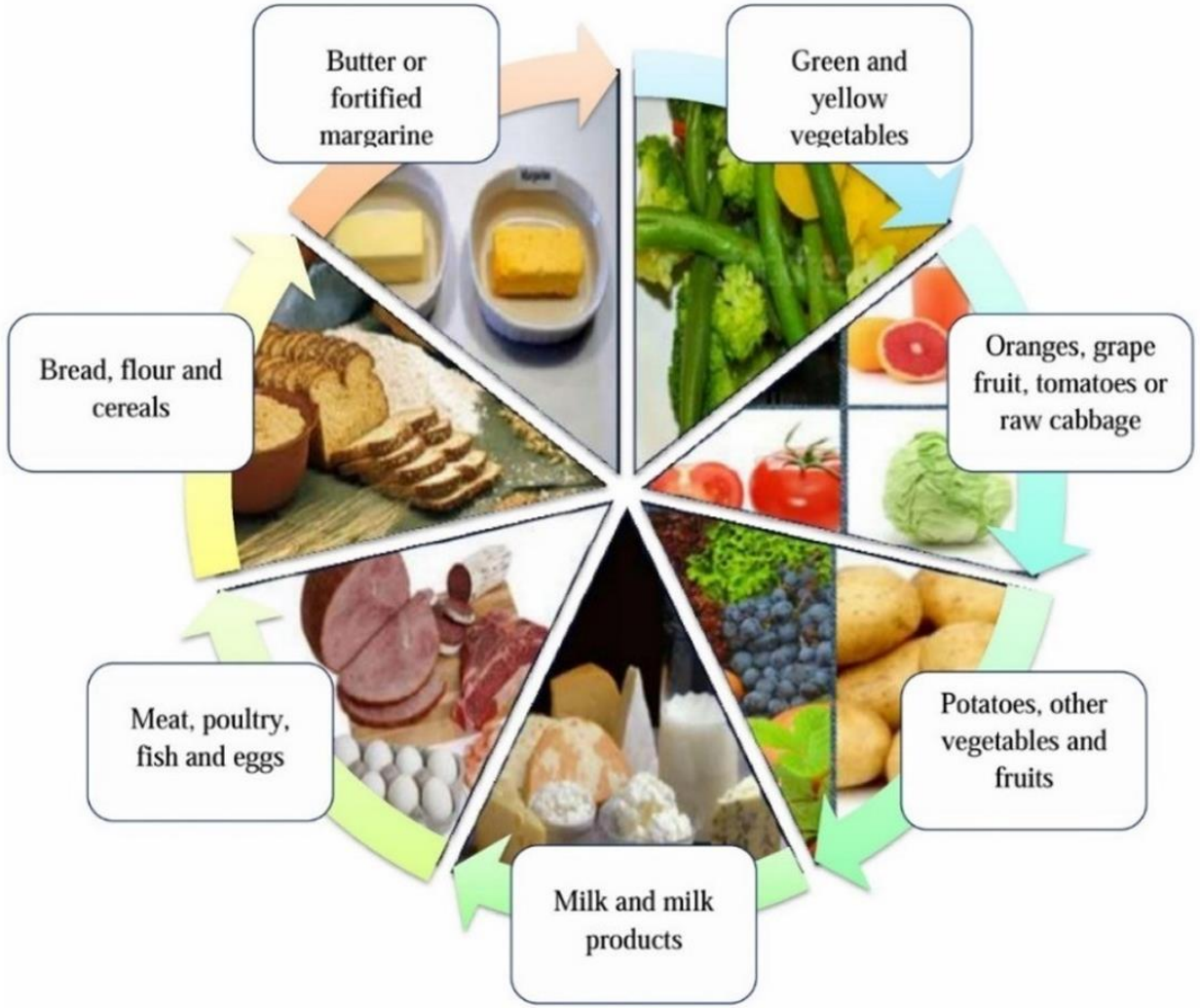


Fig. 1.3 Basic seven food groups

Food science

is the study of the **physical, biological, and chemical nature** of food.

It includes **the production, processing, preservation, packaging, and consumption of food.**

Food Science uses ideas and knowledge from many subjects to solve problems, such as:

How to feed a growing population.

How to keep food fresh and safe.

How to make food production environmentally friendly.

Why is Food Science Important?

- Ensures food safety for consumers

- Supports sustainable food production systems

- Enhances nutritional value of food products

- Reduces food waste and ensures efficient processing

- Addresses global challenges such as hunger, malnutrition, and food insecurity

Trends and Innovations in Food Science

Creating plant-based and **lab-grown meat**.

Making smarter, longer-lasting **food packaging.**

Using technology to create **personalized healthy diets**.

Ensuring food safety through **new tracking systems** like blockchain.

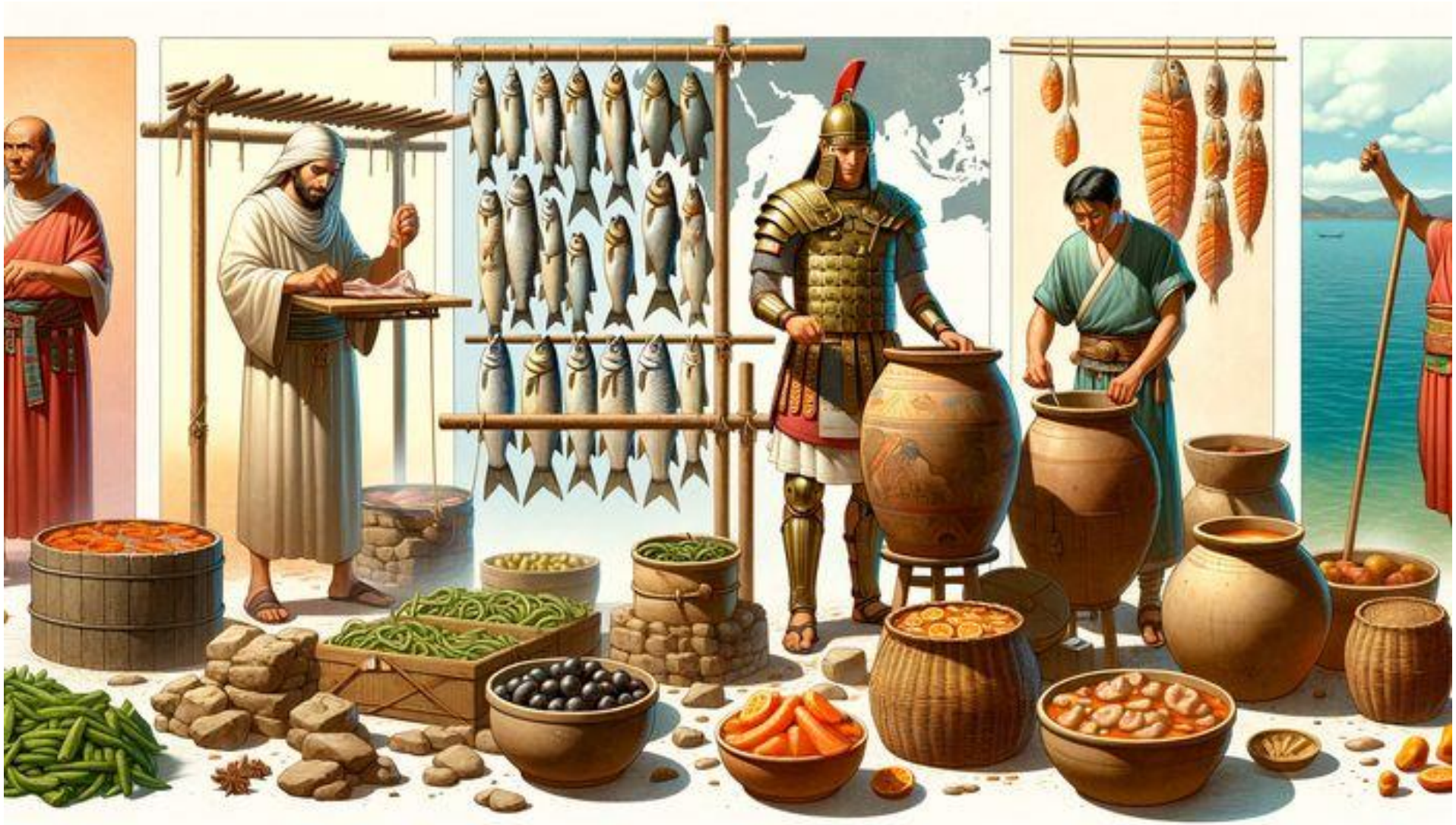
Developing **eco-friendly** and **sustainable ways** to produce food.


FOOD SAFETY
FOOD
SAFETY
FOOD
FARM to TABLE
QR CODE

History of Food Science

In **ancient** times when Food Science was not adequately developed, people had a little knowledge about the food nature and its functionality. Likewise, slight information was available

Improvements in research led to improved food **processing, preservation, and fortification.**



Food Technology:

applies science to produce, process, preserve, package, and distribute food.

Ensures food is safe, nutritious, and high quality.

Focuses on large-scale production and reducing postharvest losses.

Adds value to raw food materials.

Food Scientist

A **Food Scientist** uses knowledge of food and technology to:

- Understand food, its ingredients, functions, and nutritional value.
- Develop tasty, healthy, and affordable food products.
- Create allergen-free, novel, and functional foods.
- Improve nutrition through fortification and enrichment techniques.
- Ensure food safety, quality, and international trade by aligning standards.

Nutrition

is the science of food, nutrients, and their effects on health and disease. It studies:

How the body ingests, digests, absorbs, and uses nutrients.

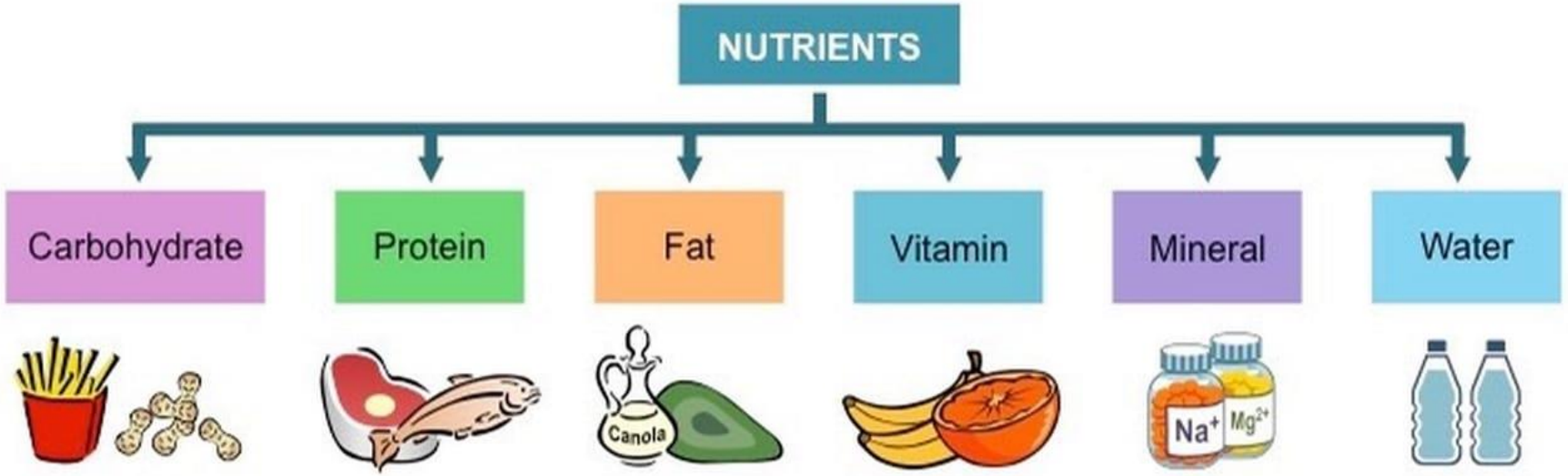
How the body removes nutrient waste products.

Social, economic, cultural, and psychological aspects of food and eating.

Nutrients are substances essential for growth, energy, and maintaining bodily functions.

They include **macronutrients** (carbohydrates, proteins, fats, and water) needed in large amounts, and

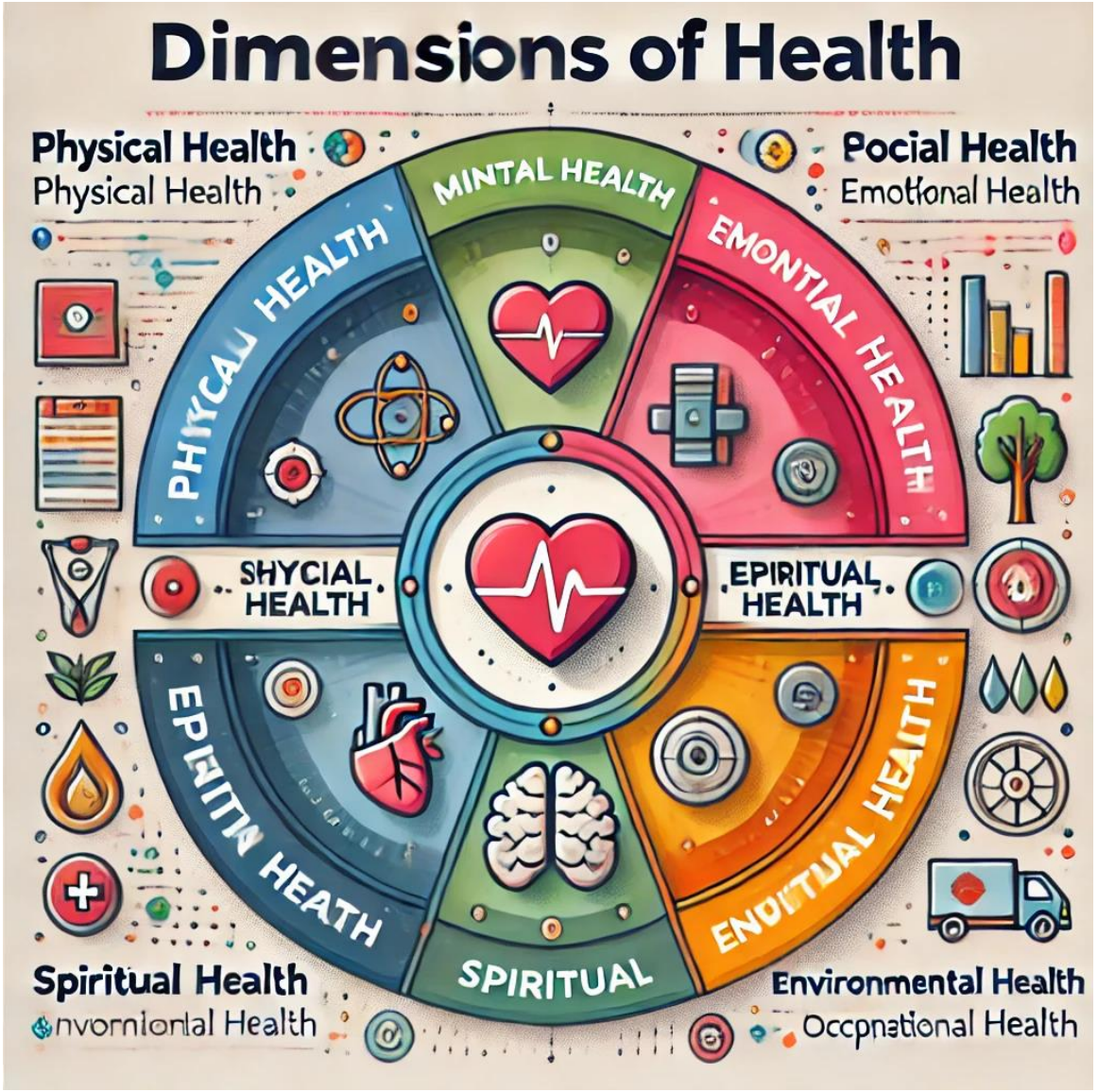
micronutrients (vitamins and minerals) required in smaller quantities. Essential nutrients must be obtained through the diet, while non-essential ones can be synthesized by the body.



Health is a state of complete physical, mental, and social well-being, not just the absence of disease.

dimensions of health present are:

- Physical Health
- Mental Health
- Emotional Health
- Social Health
- Spiritual Health
- Environmental Health
- Occupational Health




thank
you