

Tishk International University

Faculty of Applied Sciences

Nutrition and Dietetics Department

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Nutrition Assessment Laboratory

Pre-Lab Student Handout Booklet

Introduction

This booklet prepares students for weekly nutrition assessment laboratory sessions. Each module includes objectives, key concepts, preparation tasks, in-lab activities, expected outcomes, mini case studies, and performance checklists. Spaces for diagrams are indicated for print-ready formatting.

Module 1. Introduction to Nutrition Assessment Lab

Objective:

Understand the purpose, components, and importance of nutrition assessment.

Key Concepts:

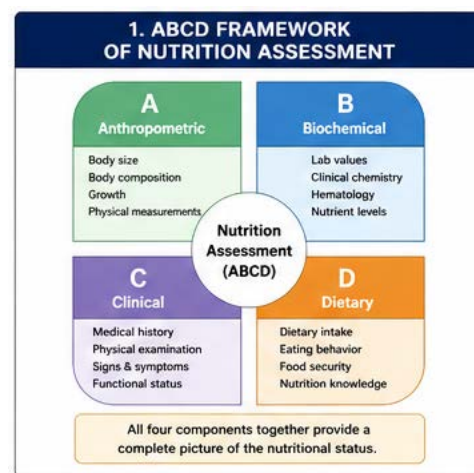
- Definition of nutrition assessment
- Four components: Anthropometric, Biochemical, Clinical, Dietary (ABCD)
- Role in public health and clinical settings

Pre-Lab Reading/Preparation:

- Review basic nutrition concepts
- Familiarize with ABCD framework

Activities (Preview):

- Identifying assessment tools
- Case-based discussion



Expected Outcome:

Students will describe the ABCD components and their applications.

Module 2. The Nutrition Care Process (NCP) in Practice

Objective:

Understand and apply the steps of the Nutrition Care Process.

Key Concepts:

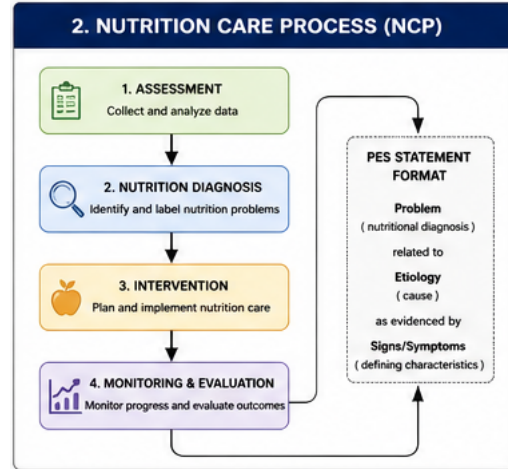
- Assessment → Diagnosis → Intervention → Monitoring & Evaluation
- PES statement (Problem, Etiology, Signs/Symptoms)

Pre-Lab Preparation:

- Review NCP framework
- Understand PES structure

Activities:

- Writing PES statements
- Applying NCP to case scenarios



Expected Outcome:

Students will construct basic PES statements and outline NCP steps.

Module 3. Dietary Interview Techniques

Objective:

Develop skills for accurate dietary data collection.

Key Concepts:

- 24-hour recall
- Food frequency questionnaire (FFQ)
- Interview bias and probing techniques

Pre-Lab Preparation:

3. DIETARY ASSESSMENT METHODS AT A GLANCE			
Method	What It Measures	Strengths	Limitations
24-Hour Recall 	Foods and beverages consumed in the past 24 hours	Quick, inexpensive, easy to administer	Relies on memory, day-to-day variation
Food Frequency Questionnaire (FFQ) 	Usual intake over a longer period (weeks-months)	Assesses usual intake, useful for large groups	Less accurate for portion size
Diet History 	Usual intake pattern in detail	Comprehensive, identifies patterns and preferences	Time-consuming, requires trained interviewer
Food Record (Weighed) 	All foods and beverages consumed	Highly accurate	High participant burden, alters eating behavior

- Read about common dietary assessment tools

Activities:

- Role-play interviews
- Practice probing questions

Expected Outcome:

Students will conduct a structured dietary interview.

Module 4. Computerized Dietary Analysis

Objective:

Learn to use software for nutrient analysis.

Key Concepts:

- Nutrient databases
- Data entry accuracy
- Interpretation of outputs

Pre-Lab Preparation:

- Basic computer skills
- Review food composition tables

Activities:

- Entering dietary data
- Generating nutrient reports

Expected Outcome:

Students will analyze dietary intake using software.

Module 5. Anthropometry: Basic Measurements

Objective:

Perform accurate anthropometric measurements.

MODULE 4. COMPUTERIZED DIETARY ANALYSIS

OBJECTIVE
Learn to use software for nutrient analysis.

KEY CONCEPTS

- Nutrient databases
- Data entry accuracy
- Interpretation of outputs

PRE-LAB PREPARATION

- Basic computer skills
- Review food composition tables

ACTIVITIES

- Entering dietary data
- Generating nutrient reports

EXPECTED OUTCOME
Students will analyze dietary intake using software.

WHAT IS COMPUTERIZED DIETARY ANALYSIS?
Computerized Dietary Analysis (CDA) uses specialized software and nutrient databases to convert food intake data into nutrient values, summarize intake, and compare it with dietary reference values.

HOW THE SOFTWARE WORKS: EXAMPLE SCREEN

NUTRIENT DATABASES
Software uses food composition databases to provide accurate nutrient values.

Examples	Description
USDA FoodData Central	Comprehensive U.S. database of food composition.
Philippine Food Composition Tables	Nutrient values of commonly consumed Filipino foods.
Local / Regional Databases	Country or region-specific food composition data.
Branded Food Databases	For packaged and processed food products.

% of Dietary Intake (DI)

Nutrient	% of DI
Energy	34%
Protein	39%
Total Fat	33%
Carbohydrate	33%
Iron	18%
Vit. C	69%

ACTIVITY 1: ENTERING DIETARY DATA

- Create a new file / client profile.
- Select the type of dietary assessment (24-hr recall, food record, etc.).
- Enter each food and beverage consumed with the correct:
 - Food description
 - Portion size (household measures or grams)
 - Meal and time
- Review entries for accuracy.

ACTIVITY 2: GENERATING NUTRIENT REPORTS

- Choose the report you need, such as:
 - Nutrient Summary
 - Food Group Report
 - Energy Distribution
 - Comparison to DBs
- Preview the report.
- Export or print the report.

INTERPRETATION OF OUTPUTS

- Compare nutrient intakes to Dietary Reference Intakes (DRIs).
- Identify nutrients that are:
 - Inadequate (< 100% of DRI)
 - Adequate (100-115% of DRI)
 - Excessive (> 120% of DRI)
- Look at food sources, energy distribution, and meal patterns.
- Use results to make nutrition recommendations.

GOOD PRACTICE TIPS

- Always enter accurate portion sizes.
- Use standardized household measures or weigh foods when possible.
- Check for duplicate foods.
- Review data carefully before generating reports.
- Interpret results in the context of the individual's needs.

MINI CASE STUDY

Juan, a 24-year-old male student, completed a 24-hour recall. Use the dietary analysis software to enter his intake, generate the nutrient summary report, and evaluate his nutrient intake compared to the recommended values.

Meal	Food(s) Consumed
Breakfast	1 cup cooked rice, 1 fried egg, 1 banana, 1 cup milk
Lunch	1 cup cooked rice, grilled chicken (1 piece), sautéed vegetables, 1 medium orange
Dinner	1 cup cooked rice, pork adobo (2 pieces), 1 cup soup, 1 slice watermelon
Snacks	1 bread roll, 1 cup iced tea

Tasks:

- Enter Juan's dietary data in the software.
- Generate the nutrient summary report.
- Identify nutrients that are inadequate, adequate, or excessive.
- Provide at least two nutrition recommendations based on the results.

Key Concepts:







- Weight, height, BMI
- MUAC, waist circumference
- Measurement errors

Pre-Lab Preparation:

- Review measurement techniques

Activities:

- Measuring weight and height
- Calculating BMI

5. BMI CLASSIFICATION (ADULTS)		
Classification	BMI (kg/m ²)	Risk of Comorbidities
 Underweight	< 18.5	Low (risk of other clinical problems)
 Normal weight	18.5 – 24.9	Average
 Overweight	25.0 – 29.9	Increased
 Obesity Class I	30.0 – 34.9	High
 Obesity Class II	35.0 – 39.9	Very High
 Obesity Class III	≥ 40.0	Extremely High

BMI = Weight (kg) / Height² (m²)

Expected Outcome:

Students will accurately measure and interpret basic anthropometry.

Module 6. Pediatric Growth Assessment

Objective:

Assess child growth using standard indicators.

Key Concepts:

- Growth charts
- Z-scores: WHZ, HAZ, WAZ
- Malnutrition classification

Pre-Lab Preparation:

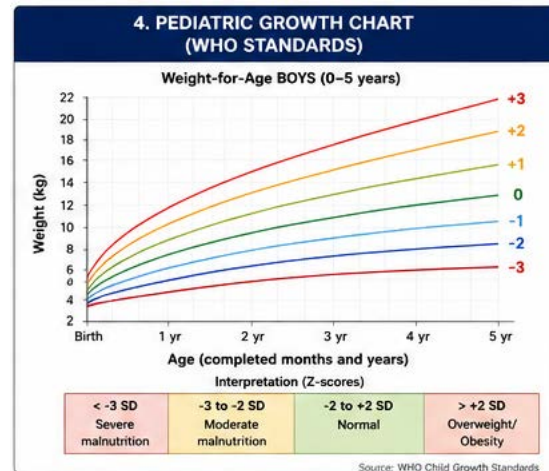
- Review WHO growth standards

Activities:

- Plotting growth charts
- Interpreting Z-scores

Expected Outcome:

Students will assess nutritional status in children.



Module 7. Advanced Body Composition

Objective:

Understand advanced methods of body composition analysis.

Key Concepts:

- Fat mass vs lean mass
- Methods: BIA, DEXA, skinfolds

Pre-Lab Preparation:





- Review body composition principles

Activities:

- Demonstration of tools
- Interpreting results

Expected Outcome:

Students will compare body composition methods.

6. BODY COMPOSITION METHODS COMPARISON			
Method	What It Measures	Advantages	Limitations
Skinfold Thickness 	Subcutaneous fat thickness	Inexpensive, portable, easy	Operator skill required, less accurate in obesity
Bioelectrical Impedance Analysis (BIA) 	Body fat %, total body water, lean mass	Quick, non-invasive, affordable	Affected by hydration status
Dual-energy X-ray Absorptiometry (DEXA) 	Bone mineral content, fat mass, lean mass	Very accurate, regional body composition	Expensive, limited availability
Air Displacement Plethysmography (BOD POD) 	Body volume, body fat %	Accurate, comfortable	Expensive, limited access

Module 8. Assessment of the Hospitalized Patient

Objective:

Conduct nutrition assessment in clinical settings.

Key Concepts:

- Screening tools (e.g., MUST, NRS-2002)
- Clinical considerations

Pre-Lab Preparation:

- Review hospital nutrition protocols

Activities:

- Case-based assessment
- Identifying nutrition risk

Expected Outcome:

Students will identify at-risk patients.

10. HOSPITAL NUTRITION SCREENING TOOLS	
MUST (Malnutrition Universal Screening Tool)	NRS-2002 (Nutrition Risk Screening)
	Score
BMI (kg/m ²)	Impaired nutritional status (BMI, WL, food intake)
Unintentional weight loss	Disease severity
Acute disease effect	Age
Total Score 0 = Low risk 1 = Medium risk ≥ 2 = High risk	Total Score ≥ 3 = At risk (Provide nutrition care)

Module 9. Estimating Energy and Protein Requirements

Objective:

Calculate individual nutritional requirements.

Key Concepts:

- Basal metabolic rate (BMR)
- Total energy expenditure (TEE)
- Protein requirements

Pre-Lab Preparation:

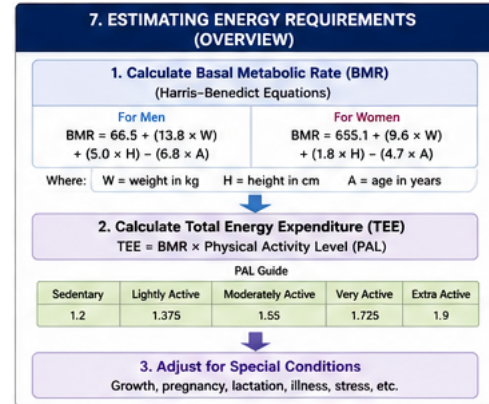
- Review equations (e.g., Harris-Benedict)

Activities:

- Calculating energy needs
- Case scenarios

Expected Outcome:

Students will estimate energy and protein needs.



Module 10. Biochemical Indicators Interpretation

Objective:

Interpret laboratory data for nutrition assessment.

Key Concepts:

- Hemoglobin, albumin, glucose
- Lipid profile
- Limitations of biomarkers

Pre-Lab Preparation:

- Review normal lab ranges

Activities:

- Case interpretation
- Linking labs to nutrition status

8. BIOCHEMICAL INDICATORS QUICK GUIDE

Indicator	Normal Range (Adults)	Nutritional Significance
Hemoglobin (Hb)	Men: 13.5 – 17.5 g/dL Women: 12.0 – 15.5 g/dL	Low: Iron, B12, folate deficiency, chronic disease
Serum Albumin	3.5 – 5.0 g/dL	Low: Protein-energy malnutrition, inflammation, liver/kidney disease
Serum Ferritin	Men: 30 – 400 ng/mL Women: 15 – 150 ng/mL	Low: Iron deficiency High: Inflammation
Fasting Blood Glucose	70 – 99 mg/dL	High: Risk of diabetes Low: Hypoglycemia
Serum 25(OH)D (Vitamin D)	20 – 50 ng/mL	Low: Vitamin D deficiency
Serum Vitamin B12	200 – 900 pg/mL	Low: Vitamin B12 deficiency
Serum Folate	> 4.0 ng/mL	Low: Folate deficiency

Expected Outcome:

Students will interpret key biochemical indicators.

Module 11. Clinical Physical Assessment

Objective:

Identify physical signs of nutritional deficiencies.

Key Concepts:





- Hair, skin, nails
- Muscle wasting
- Edema

Pre-Lab Preparation:

- Review deficiency signs

Activities:

- Visual assessment practice
- Case discussions

9. CLINICAL SIGNS OF NUTRITIONAL DEFICIENCIES		
Deficiency	Key Signs & Symptoms	Images (Examples)
Vitamin A	Night blindness, dry eyes, Bitot's spots, dry skin	
Iron	Pallor, fatigue, brittle nails, koilonychia	
Vitamin C	Bleeding gums, petechiae, poor wound healing	
Protein (PEM)	Muscle wasting, edema, fatty liver, growth failure	

Expected Outcome:

Students will recognize clinical signs of malnutrition.

Module 12. Comprehensive Assessment & Chronic Disease Prevention

Objective:

Integrate all assessment methods for prevention.

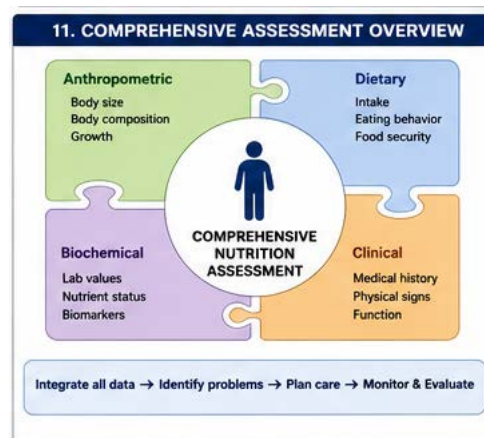
Key Concepts:

- Holistic assessment
- Risk factor identification
- Lifestyle modification

Pre-Lab Preparation:

- Review all previous modules

Activities:



- Full case assessment
- Developing prevention plans

Expected Outcome:

Students will conduct comprehensive assessments and suggest interventions.