

Course Description Form

1. Educational Institution:
Northern Technical University / Nimrud Technical Institute
2. Academic Department:
Department of Therapeutic Nutrition Techniques
3. Course Title:
Human Metabolism (Theory and Practical)
4. Course Code:
TNT111
5. Level / Academic Year:
First / 2025-2026
6. Date of Description Preparation:
02/01/2026
7. Available Attendance Modes:
In-person
8. Total Credit Hours / Units:
60 hours (2 theoretical + 2 practical) × 15 weeks
9. Course Coordinator (All names if multiple):
Name: Omar R. Ghayyib Al-Karkhi
Email: omarrasheed12-hwj@ntu.edu.iq
10. Course Objectives:
• To introduce students to the fundamentals of biochemistry and clinical laboratory techniques • To provide knowledge about clinical chemistry laboratories and the analytical instruments used within them. • To develop students' skills in interpreting laboratory results and correlating them with clinical conditions. • To enable students to understand the biochemical basis of physiological functions in the human body. • To train students in performing clinical biochemical tests such as glucose, cholesterol, triglycerides, total protein, and albumin assays. • To enhance students' ability to interpret biochemical disorders related to metabolic abnormalities.

- To promote laboratory discipline, accuracy, and adherence to safety procedures.

11. Teaching and Learning Strategies:

- Dialogue and discussion strategy.
- Brainstorming.
- Self-learning.
- Assigning collaborative group work.
- Assigning reports.

12. Course Structure:

Week	Hours	Unit or subject name	Learning method	Evaluation method
1	4 Hours (1 Theory+2 2 Practical)	Metabolism	Introduction Clinical biochemistry	Oral, written and practical daily assessments and scientific reports.
2	4 Hours (1 Theory+2 2 Practical)	Enzymes	Elementary calorimetry spectrophotometry	Oral, written and practical daily assessments and scientific reports.
3	4 Hours (1 Theory+2 2 Practical)	Michaelis - Menten theory	Fasting & Postprandial blood sugar	Oral, written and practical daily assessments and scientific reports
4	4 Hours (1 Theory+2 2 Practical)	Carbohydrate Metabolism	Glucose tolerance test (GTT)	Oral, written and practical daily assessments and scientific reports
5	4 Hours (1 Theory+2 2 Practical)	Lactic Acid Fermentation	Estimation of serum total cholesterol	Oral, written and practical daily assessments and scientific reports
6	4 Hours (1 Theory+2 2 Practical)	Citric acid cycle / TCA cycle / Krebs cycle	Determination of serum triglyceride	Oral, written and practical daily assessments and scientific reports
7	4 Hours (1 Theory+2 2 Practical)	The electron transport chain	Lipoprotein-cholesterol fractionation	Oral, written and practical daily assessments and scientific reports
8	4 Hours (1 Theory+2 2 Practical)	Fructose Metabolism	Estimation of ketone bodies in the urine	Written examination
9	4 Hours (1 Theory+2 2 Practical)	Galactose Metabolism	Determination of serum total protein	Oral, written and practical daily assessments and scientific reports

10	4 Hours (1 Theory+2 2 Practical)	Glycogen metabolism	Determination of serum Albumin	Oral, written and practical daily assessments and scientific reports
11	4 Hours (1 Theory+2 2 Practical)	Protein metabolism	Estimation of serum urea	Oral, written and practical daily assessments and scientific reports
12	4 Hours (1 Theory+2 2 Practical)	Protein synthesis	Estimation of serum uric acid	Oral, written and practical daily assessments and scientific reports
13	4 Hours (1 Theory+2 2 Practical)	Lipid Metabolism	Determination of serum amylase	Written examination
14	4 Hours (1 Theory+2 2 Practical)	Cholesterol metabolism	Estimation of serum calcium	Oral, written and practical daily assessments and scientific reports
15	4 Hours (1 Theory+2 2 Practical)	Nucleotide Metabolism	Estimation of serum phosphorus	Oral, written and practical daily assessments and scientific reports

3. Course Evaluation

Grade distribution out of 100 according to the tasks assigned to the student, such as daily preparation, daily oral tests, monthly or written exams, reports, etc

• Learning and Teaching Resources

Required textbooks (curricular book if any)	• Lippincott's Illustrated Reviews: Biochemistry • Clinical Biochemistry - Michael Lieberman
Electronic References, Websites	• Electronic References: PubMed, NCBI, Medline

رئيس القسم
د. محمد زبیر



رئيس اللجنة العلمية
د. دینا عبد الرزاق عبد الله