

Course Description Form

1. Educational Institution:
Northern Technical University / Nimrud Technical Institute
2. Academic Department:
Department of Therapeutic Nutrition Techniques
3. Course Title:
Biochemistry (Theory and Practical)
4. Course Code:
TNT118
5. Level / Academic Year:
First / 2025-2026
6. Date of Description Preparation:
21/10/2025
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 familiarize students with analytical instruments including Spectrophotometer, ELISA, VIDAS, and E411 systems.

- 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	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4 Hours (1 Theory+2 2 Practical)	Identify cell components	Cells: The units of life	Spectrophotometer explanation	Oral, written and practical daily assessments and scientific reports.
2	4 Hours (1 Theory+2 2 Practical)	Explain carbohydrates and their functions	Carbohydrates: Definition and functions	Spectrophotometer reactions	Oral, written and practical daily assessments and scientific reports.
3	4 Hours (1 Theory+2 2 Practical)	Interpret carbohydrate digestion	Carbohydrates: Classification and digestion	Blood glucose determination	Oral, written and practical daily assessments and scientific reports
4	4 Hours (1 Theory+2 2 Practical)	Understand lipid functions	Lipids: Definition and functions	Blood cholesterol determination	Oral, written and practical daily assessments and scientific reports
5	4 Hours (1 Theory+2 2 Practical)	Analyze triglycerides	Lipids: Classification and absorption	Triglycerides determination	Oral, written and practical daily assessments and scientific reports
6	4 Hours (1 Theory+2 2 Practical)	Recognize proteins	Amino acids and proteins: Definition	Total serum protein determination	Oral, written and practical daily assessments and scientific reports
7	4 Hours (1 Theory+2 2 Practical)	Perform albumin analysis	Amino acids and proteins: Classification	Serum albumin determination	Oral, written and practical daily assessments and scientific reports
8	4 Hours (1 Theory+2 2 Practical)	Understand hormones	Hormones: Definition and classification	Hormone analyzer principles	Written examination
9	4 Hours (1 Theory+2 2 Practical)	Identify hormone types	Hormones: Physiological functions	ELISA instrument principle	Oral, written and practical daily assessments and scientific reports
10	4 Hours	Explain nucleic acids	Nucleotides and nucleic acids	VIDAS instrument principle	Oral, written and

	(1 Theory+2 2 Practical)				practical daily assessments and scientific reports
11	4 Hours (1 Theory+2 2 Practical)	Interpret biochemical functions	Nucleic acids: Biological functions	E411 instrument principle	Oral, written and practical daily assessments and scientific reports
12	4 Hours (1 Theory+2 2 Practical)	Apply enzyme concepts	Enzymes: General properties	Serum amylase activ determination	Oral, written and practical daily assessments and scientific reports
13	4 Hours (1 Theory+2 2 Practical)	Explain reaction velocity	Enzymes: Factors affecting reaction	Blood lipase activity determination	Written examination
14	4 Hours (1 Theory+2 2 Practical)	Identify vitamins	Vitamins: Classification	Visit to educational laboratories	Oral, written and practical daily assessments and scientific reports
15	4 Hours (1 Theory+2 2 Practical)	Summarize concepts	General review	Practical review	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 books, if any)	• Lippincott's Illustrated Reviews: Biochemistry • Clinical Biochemistry - Michael Lieberman
Electronic References, Websites	• Electronic References: PubMed, NCBI, Medline

رئيس القسم
د. محمد عزيز محمد



رئيس اللجنة العلمية
د. دينا عبد الرزاق مبراهيم