Course Description Form

1. Course Name:
Metabolic pathways
2. Course Code:
MEPA373
3. Semester / Year:
Second semester (spring) / 2023-2024
4. Description Preparation Date:
1/2/2024
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
2 theoretical hours + 3 practical hours (75 hours) / 3.5 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Hala Abdalhadi Salih
8. Course Objectives
• Understand why energy is necessary for sustaining life. • Understand how organisms transform matter and energy in accordance with the laws of thermodynamics. • Recognize that energy conversions are dependent on metabolic pathways. • Understand the role of enzyme inhibition in metabolic pathways and predict the effects of enzyme deficiency due to genetic disease. Apply knowledge of converging metabolic pathways and enzyme inhibit to understand the treatment options for a metabolic

9. Teaching and Learning Strategies	
Theoretical - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning reports -Conducting monthly and daily examinations	Practical Interactive lecture -Discussion, dialogue, brainstormi -Conducting laboratory experimen -Assigning reports -Conducting daily and monthly examinations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoret		Theoretical: Introduction to	THEORETICAL	Shortexams,

	ical 3Practical	TheoreticalA1 A1: Introducing the student to the meaning of the catabolic and anabolic pathways. Practical: A9 Introducing the student to the practical concept of metabolic pathway	metabolic processes. Practical: Introduction to metabolic pathways. Practical	audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	assignments, discussions
2	2Theoretical 3Practical	Theoretical: A2 Introducing the student to the path of glycolysis. Practical: A7 The student understands what diabetes is and measures the sugar level	Theoretical: Carbohydrate metabolism Practical glycolysis pathway: Diabetes	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
3	2Theoretical 3Practical	Theoretical: A3 Completing the topic of glycolysis. Practical: B8 The student understands what glycogen is and how it is estimated	Theoretical: Carbohydrate metabolism Practical glycolysis pathway: Determination of glycogen in tissue	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
4	2Theoretical 3Practical	Theoretical: B1 The student understands what the Krebs cycle is. Practical: B9 The student understands what the Corie cycle is	Theoretical: Carbohydrate metabolism, Krebs cycle. Practical: Corie cycl	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
5	2Theoretical 3Practical	Theoretical: A4 The student explains the	Theoretical: Carbohydrate metabolism Phosphogluconate pathway Practical: Fermentation	THEORETICAL audio methods, Writing on the boa Direct dialogue	Shortexams, assignments, discussions

		phosphogluconate process. Practical: A10 The student tests fermentation methods		style PRACTICAL Assigning tasks and reports	
6	2Theoretical 3Practical	A5 The student was able to know equipment	Scientific visit	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
7	2Theoretical 3Practical	Theoretical: B2 The student explains what oxidative phosphorylation is. Practical: A11 The student learns about methods for estimating kidney functions	Theoretical: Carbohydrate metabolism and oxidative phosphorylation. Practical: Kidney functions	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
8	2Theoretical 3Practical	Theoretical: B3 The student explains what oxidative phosphorylation is. Practical: A12 The student learns about methods for estimating kidney functions	Theoretical: Carbohydrate metabolism and oxidative phosphorylation. Practical: Kidney functions	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
9	2Theoretical 3Practical	Theoretical: A6 The student understands the path of glycogen catabolism. Practical: B10 The student measures urea	Theoretical: Carbohydrate metabolism, glycogen catabolism. Practical: Urea	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions

10	2Theoretical 3Practical	Theoretical B4 : The process of building glycogen. Practical: B11 Estimating creatine	Theoretical: Carbohydrate metabolism, glycogen synthesis pathway. Practical: Creatine	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
11	2Theoretical 3Practical	Theoretical : A7 Theoretical: Introducing the student to the path of fat catabolism. Practical: B12 The student understands what uric acid is	Theoretical: fat metabolism, Practical:uric acid	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
12	2Theoretical 3Practical	Theoretical: B5 Fat anabolic path Practical: B13 The student experiments with methods for estimating kidney functions and writes a report about them	Theoretical: fat metabolism Practical: Kidney functions	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
13	2Theoretical 3Practical	A9 The student was able to know the equipments	Scientific visit		Shortexams, assignments, discussions
14	2Theoretical 3Practical	Theoretical: B6 The biological structure of ketone bodies. Practical: B14 The student understands what iron is	Theoretical: Ketone bodies. Practical: Iro	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions

15	2Theoretical 3Practical	A8 The student was able to know the topics of the course	General review	THEORETICAL audio methods, Writing on the boa Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions

11. Course Evaluation

t	Evaluation methods	Evaluation date (one week)	Grade	Relative weight %
1	Final theoretical report + theoretical practical reports	Theoretical 15 weeks Practical 1-15 weeks	7theoretical + 6 practical	13%
2	Short test 1 Quiz	3 weeks	4theoretical + 2practical	6%
3	Midterm exam (theoretical and practical)	9 weeks	10theoretical + 5 practical	15%
4	Short test 2 Quiz	12 weeks	4 theoretical + 2 practical	6%
5	Final practical test	practical exams week	20	20%
6	Final theoretical exam	theoretical exams week	40	40%
			100	100

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	no
Main references (sources)	Biochemistry Dr . Tariq younis
Recommended books and references (scientific journals, reports...)	Elviser journal Nature journal
Electronic References, Websites	htttps://www.scientificamerican.com/chemistry/

Instructor of theoritical part

Dr. Hala abdalhadi salih

Instructor of practical part

Chairman of the scientific committee

Prof. Dr. Moafak mahmood ahmed

Head of the department of Food science

Prof. Dr. Sumaya khalaf badawi