

## Course Description Form

<b>1. Course Name:</b>	
Metabolic pathways	
<b>2. Course Code:</b>	
MEPA373	
<b>3. Semester / Year:</b>	
Second semester (spring) / 2023-2024	
<b>4. Description Preparation Date:</b>	
1/2/2024	
<b>5. Available Attendance Forms:</b>	
Presence	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
2 theoretical hours + 3 practical hours (75 hours) / 3.5 units	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Dr.Hala Abdalhadi Salih	
<b>8. Course Objectives</b>	
<ul style="list-style-type: none"> <li>•</li> <li>• Understand why energy is necessary for sustaining life</li> <li>• Understand how organisms transform matter and energy in accordance with the laws of thermodynamics.</li> <li>• Recognize that energy conversions are dependent on metabolic pathways.</li> <li>• Understand the role of enzyme inhibition in metabolic pathways and predict the effects of enzyme deficiency due to genetic disease.</li> <li>• Apply knowledge of converging metabolic pathways and enzyme inhibition to understand the treatment options for a metabolic</li> </ul>	
<b>9. Teaching and Learning Strategies</b>	
<b>Theoretical</b> - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning reports -Conducting monthly and daily examinations	<b>Practical</b> Interactive lecture -Discussion, dialogue, brainstorming -Conducting laboratory experiments -Assigning reports -Conducting daily and monthly examinations
<b>10. Course Structure</b>	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical 1 3Practical	Theoretical: A1: Introducing the student to the meaning of catabolic and anabolic pathways. Practical: A9 Introducing student to practical concept of metabolic pathway	Theoretical: Introduction to metabolic processes. Practical: Introduction to metabolic pathways. Practical	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
2	2Theoretical 1 3Practical	Theoretical: A2 Introducing student to pathway glycolysis. Practical: A7 The student understands what diabetes is and measures sugar level	Theoretical: Carbohydrate metabolism Practical glycolysis pathway: Diabetes	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
3	2Theoretical 1 3Practical	Theoretical: A3 Completing topic 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 board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
4	2Theoretical 1 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 cycle	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
5	2Theoretical 1 3Practical	Theoretical: A4 The student explains phosphoglucose production	Theoretical: Carbohydrate metabolism Phosphoglucose pathway Practical: Fermentation	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL	Shortexams, assignments, discussions

		Practical: A10 The student tests fermentation methods		Assigning tasks and reports	
6	2Theoretical 1 3Practical	A5 The student is able to know equipment	Scientific visit	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
7	2Theoretical 1 3Practical	Theoretical: B2 The student explains oxidative phosphorylation. Practical: A11 The student learns alternative methods estimating kidney function	Theoretical: Carbohydrate metabolism and oxidative phosphorylation. Practical: Kidney functions	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
8	2Theoretical 1 3Practical	Theoretical: B3 The student explains oxidative phosphorylation. Practical: A12 The student learns alternative methods estimating kidney function	Theoretical: Carbohydrate metabolism and oxidative phosphorylation. Practical: Kidney functions	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
9	2Theoretical 1 3Practical	Theoretical: A6 The student understands path of glycolysis catabolism. Practical: B10 The student measures urea	Theoretical: Carbohydrate metabolism, glycogen catabolism. Practical: Urea	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
10	2Theoretical 1 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 board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions

11	2Theore 1 3Practic	Theoretical : A7 Theoretical: Introducing student to path of catabolism. Practical: B12 The stu understands what uric aci	Theoretical: fat metabolism, Practical:uric acid	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
12	2Theore 1 3Practic	Theoretical: B5 Fat ana path Practical: B13 The stu experiments with methods estimating kidney funct and writes report at them	Theoretical: fat metabolism Practical: Kidney functions	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
13	2Theore 1 3Practic	A9 The student able to know equipments	Scientific visit		Shortexams, assignments, discussions
14	2Theore 1 3Practic	Theoretical: B6 The biolog structure ketone bod Practical: B14 The stu understands what iron is	Theoretical: Ketone bod Practical: Iro	THEORETICAL audio methods, Writing on the board Direct dialogue style PRACTICAL Assigning tasks and reports	Shortexams, assignments, discussions
15	2Theore 1 3Practic	A8 The student able to know topics of course	General review	THEORETICAL audio methods, Writing on the board 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 textbo (curricular books, if any)	no
Main references (sources)	Biochemistry Dr . Tariq younis
Recommended books and references (scientific journals, reports...)	Elviser journal Nature journal
Electronic Websites	Referenc <a href="https://www.scientificamerican.com/chemistry/">ps://www.scientificamerican.com/chemistry/</a>

Instructor of theoritical part

Instructor of practical part

Dr. Hala abdalhadi salih

Chairman of the scientific committee

Head of the department of Food science

Prof. Dr. Moafak mahmood ahmed

Prof. Dr. Sumaya khalaf badawi