



Metabolism module workbook



Table of contents

Click to use bookmarks to the beginning of each Session

Timetable 2

Section 1: Introduction 3

Unit Leaders 3

Aims 3

Learning During the Infection Unit 3

Learning Outcomes 4

Sessional Structure and Teaching Methods 4

Group allocations 5

Assessments 5

Reading 5

Staff 6

Section 2: The Sessions

Week 1: Nutrition and body weight Homeostasis 7

Week 2: Cell Metabolism Carbohydrate Metabolism 1 14

Week 3: Carbohydrate Metabolism 2 Tricarboxylic Acid Cycle, Gluconeogenesis 19

Week 4: Oxidative Phosphorylation, Oxidative Stress Fuel Storage and Lipid Metabolism 24

Week 5: Lipid Metabolism and Transport Protein and Nitrogen Metabolism 30

Week 6: Control of Energy Metabolism Drug Metabolism 38

Week 7: Revision 41

Week 8: Introduction to endocrinology and the endocrine pancreas 45

Week 9: Diabetes mellitus Control of appetite, metabolic syndrome 46

Week 10: The thyroid gland 49

Week 11: Calcium Metabolism Pituitary and Adrenal Glands 61

Week 12: Disorders of the adrenal cortex Adaptations of metabolism 61

Week 13: Revision 61

APPENDIX A - Learning Objectives: metabolism Unit 64

Metabolism Unit Timetable

Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8	Session 9	Session 10	Session 11	Session 12	Session 13
lecture	lecture	lecture	lecture	lecture	lecture		lecture	lecture	lecture	lecture	lecture	
Nutrition and body weight	Cell metabolism	Carbohydrate metabolism 2	Oxidative phosphorylation	protein metabolism	Control of Energy Metabolism	Revision	Introduction to endocrinology & Pancreas	Diabetes mellitus	Thyroid gland	Calcium Metabolism	Adrenal cortex disorders	Revision
lecture	lecture	lecture	lecture	lecture	lecture		lecture	lecture	lecture	lecture	lecture	
homeostasis and circadian rhythm	Carbohydrate metabolism 1	Tricarboxylic cycle & Gluconeogenesis	fuel storage	Lipid transport	Drug metabolism	1 st monthly exam	Introduction to endocrinology & Pancreas	Control of appetite	Thyroid gland	Pituitary and Adrenals	Adaptations of metabolism	2nd monthly exam
			Formative exam	Formative exam	Formative exam		Formative exam	Formative exam	Formative exam			
Group work	Group work	Group work	Group work	Group work	Group work		Group work	Group work	Group work	Group work	Group work	

Module Leader: **Dr. Amani Naama Alramdhan**

Co-Leader: **Dr. Zainab Almnaseer**

Aim

The aim of metabolism module is lecturing students on how to acknowledge and understand the vital activities inside the human body on a molecular level, as well as chemical examinations used in the diagnosis of some diseases.

Therefore, the aim of this unit is to provide a structure for students to consider patients with certain clinical problem. Signs and symptoms presented in these clinical problems to help in diagnosis. We have chosen a limited number of clinical problems with certain metabolic disturbances.

The 'metabolic pathways are used in different contexts, so that your knowledge of how to apply this module will grow as the semester progresses.

Understanding the biochemical pathway is an important first step in the metabolism module. This will also allow for a progressive accumulation of knowledge of how the body manage these biochemical pathways in responding to environmental and genetic factors.

Learning During the metabolism module.

The lecturers who are running the module are specialists, pharmacists and biochemists all involved in looking after patients on a daily basis.

The lectures are delivered by using PowerPoint format using demonstration tools such as illustrative charts. Moreover, there are interactive engagements of the students during the lecture, as well as during the small group session where the clinical problems are discussed between them.

The evaluation methods were done by formative and summative exams. These exams include quizzes, direct questions, case scenarios which contain 5 short essays in each case.

Summary of Intended Learning Outcomes.

On completion of this module, students should be able to:

1. Describe the principles of the metabolism module.
2. Describe the metabolic pathways and the related problems.
3. Describe a clinical approach to gathering information in order to evaluate patients with certain metabolic disease and to use the principles of metabolic pathway in diagnosis.
4. Describe the use of laboratory investigations to aid in the diagnosis.
5. Describe the principles of management in response to general measures of support and specific treatment.

References.

1. Marks Essentials of Medical Biochemistry.
2. Ganong's Review of Medical Physiology.
3. Medical Biochemistry, Baynes and Dominiczak

4. Medical Physiology Walter F. Boron and Emile L. Boulpaep