Maladies métaboliques, nutrition et diabète

Lecturers
Alessandra KUPPER CARDOZO (Coordinator), Jean-Charles PREISER and Joanne RASSCHAERT

Course mnemonic
BMOL-G3308

ECTS credits
5 credits

Language(s) of instruction
French

Course period
Second term

Campus
Erasme

Course content

Learning Activity 1 (AA1)

"Energy metabolism and the control of food intake" (J Rasschaert). Control of feeding behaviour; Carbohydrate and lipid metabolism in physiological and pathological conditions - Cholesterol and lipoprotein metabolism - The atherosclerotic lesion: etiopathogenesis, risk factors and protective mechanisms - Ethanol: metabolism, interference with the metabolism of energy nutrients and deleterious effects on health.

· **Learning Activity 2 (AA2)**

"Diabetes: a multifaceted pathology" (AK Cardozo). Factors involved in the maintenance of carbohydrate homeostasis; regulation of insulin secretion by pancreatic beta cells; different forms of diabetes (type 1 diabetes, type 2 diabetes, gestational diabetes and MODY); mechanisms involved in pancreatic beta cell dysfunction in diabetes (different types of cell death, endoplasmic reticulum stress, etc) and insulin resistance.

· **Learning Activity 3 (AA3)**

"Introduction to nutrition" (JC Preiser). Basics of nutrition, nutrient requirements, methods of assessing body composition, diagnosis and management of specific disease situations, treatment, and nutritional support.

Objectives (and/or specific learning outcomes)

By the end of this course, students will be able to describe and explain:

- The molecular and cellular mechanisms that regulate the control of food intake and energy metabolism as well as the deregulations of those mechanisms in metabolic diseases.
- The functions of the main classes of genes and proteins involved in the mechanisms regulating food intake and energy metabolism.
- The development of new diagnostic tools as well as the identification process of new therapeutic targets in the field of metabolic diseases
- The role of hormones and other endogenous or exogenous factors and of the metabolic tissues in the control of glucose homeostasis.
- The complications of diabetes
- The common features and specificity of different types of diabetes.
- The uptake and utilisation of macro- and micro-nutrients by the body.
- The principles applied to determine the average requirements of the population to avoid deficiencies and excesses.
- How to assess body composition for diagnostic and research purposes.
- The principles of nutrition in special situations (prolonged fasting, aging, aggression, cancer).
- The principles of patient nutrition management, including enteral and parenteral medical nutrition.

Pre-requisits and co-requisits

Pre-requisites courses

BMOL-G2208 | Biochimie 1: biochimie générale | 10 crédits and BMOL-G2209 | Biochimie 2 : biochimie métabolique et radioprotection | 5 crédits

Teaching method and learning activities

- Ex cathedra, onsite.

NB: Online via TEAMS if the number of students wishing to attend the course exceeds the capacity of the allocated seats, considering the possible measures that would have to be implemented in the context of a health crisis.

In case of a health crisis, parts of the course could be delivered only online via TEAMS.

Contribution to the teaching profile

- To master basic scientific knowledge of the fundamental sciences related to the biomedical field and to become familiar with the know-how and observation that are the basis of our scientific training.
- To reason with rigour, to show a sense of analysis and scientific curiosity.
- Be autonomous, organise and manage your time, plan and prioritise your work.
- Ability to synthetise and argue.

References, bibliography and recommended reading

AA1 - Human Metabolism: A Regulatory Perspective, 4th Edition, Keith N. Frayn, Rhys Evans, 2019; Marks' Basic Medical Biochemistry A clinical approach, 5th ed., A.D. Marks, 2018; Biochemistry of lipids, lipoproteins and membranes, Neale D. Ridgway and Roger S. McLeod, 6th Edition ▪ 2015

AA2 -2 AK Cardozo: Textbook of Diabetes: Richard I. G. Holt, Clive Cockram, Allan Flyvbjerg, Barry J. Goldstein, John Wiley & Sons, 7 déc. 2016

AA3 - JC Preiser: Traité de nutrition clinique, ed SFNEP (2016), Basics in Clinical Nutrition (ESPEN – Ed Galen), Référentiel du collège des enseignants en nutrition, ed Elsevier Masson, 2019)

Course notes

Université virtuelle

Other information

Place(s) of teaching

Erasme

Contact(s)

Coordinator : Alessandra K. Cardozo, Inflammation and Cell Death Signalling, Faculté de Medecine, ULB, campus Erasme, Bat G/E, 808 Route de Lennik, 1070, Bruxelles - Tel + 32 2 (0) 555 6204 - Email: alessandra.kupper.cardozo@ulb.be

Joanne Rasschaert, Laboratoire de Biochimie osseuse et métabolique, ULB campus Erasme, Bat G/E, Route de Lennik 808, 1070 Bruxelles - Tel. + 32 2 (0) 5556307. E-mail : Joanne.Rasschaert@ulb.be

Jean-Charles Preiser - Directeur Médical Recherche Biomédicale et Enseignement Clinique, Hôpital Erasme, 808 Route de Lennik, 1070 Bruxelles – Tel: + 32 (0) 2 555 6591 – Email: jean-charles.preiser@erasme.ulb.ac.be

Evaluation method(s)

written examination and Oral examination

written examination

Open question with short answer, Question with negative count, Open question with developed answer, Closed question with Multiple Answers (MAQ), Closed question with multiple choices (MCQ) and Open question with fill-in the blanks text

Oral examination

Open question with short answer and Open question with long development

Evaluation method(s) (additional information)

- On-site test: Depending on the health situation, if the on-site test is possible, multiple choice and/or open-ended questions. One hour will be given per exam (AA) to be passed. Negative marking for wrong answers for multiple choice questions. If the number of students allows, oral examination.
- If on-site is not possible due to the health situation, the test will consist exclusively of multiple-choice questions. Negative marking for wrong answers. If the number of students allows, oral examination via TEAMS.

Determination of the mark (including the weighting of partial marks)

The final mark of this teaching unit will be calculated using the harmonic average of the marks obtained for the three AAs. If the final grade of the UE is lower than 10/20, the grades of the AAs equal to or higher than 10/20 will be carried over from one session to the next within the same academic year, as well as for the two academic years following their achievement.

Main language(s) of evaluation

French

Programmes

Programmes proposing this course at the faculty of Medicine

BA-BIME | Bachelor in Biomedical sciences | unit 3