




4.00 credits

37.5 h

Q1

Teacher(s)	Debier Cathy ;Larondelle Yvan (coordinator) ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	The set of competences, abilities and knowledge acquired during a bachelor degree in the area of Bioscience engineering.
Main themes	<ul style="list-style-type: none"> - A detailed description of the processes of digestion and absorption - A review of the main aspects of the metabolism of glucides, lipids and protides, with a special focus on the regulation and on the fate of the dietary constituents - An integrated view of the main metabolic pathways via the analysis of some specific physiological situations (fasting, diabetes, exercise, pregnancy, lactation) - A detailed analysis of the dietary requirements of humans (energy, nitrogen, amino acids, essential fatty acids, vitamins, water, minerals, dietary fibre), including the biochemical, metabolic and physiological justifications for them - A detailed presentation of the concept of 'healthy food' in relation with some chronic diseases such as type-II diabetes, cardiovascular diseases, metabolic syndrome, osteoporosis, obesity, neurodegenerative diseases, intestinal diseases.
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <ul style="list-style-type: none"> a. <u>Contribution de l'activité au référentiel AA (AA du programme)</u> 1.1 ; 1.2 ; 1.4 ; 2.5 b. <u>Formulation spécifique pour cette activité des AA du programme</u> <p>At the end of the course, the student will be able :</p> <ul style="list-style-type: none"> - to make to links between the major pathways of the energetic and nitrogen metabolism, - to expose the metabolic relationships between the different organs and physiological functions of the organism, - to discuss the impact of food items, specific nutrients, and feeding behaviours on human metabolism, - to give a justification for the nutrient requirements of humans, - to comment on the concept of « healthy food », - to give a sound opinion on the industrial developments in the frame of the « healthy food » concept, - to make practical and innovative proposals for the development of food items.
Evaluation methods	Ongoing evaluation with written tests organized throughout the quarter (no exam during the session in January)
Teaching methods	Coordinated package of lectures and flipped classrooms with videos followed by exercises, examples and discussion (questions-answers) sessions. Seminars given by invited experts Most of the activities require the presence of the students.
Content	1 – Digestion and absorption 2 – Post-absorptive nutrient utilization: 1) during the absorptive phase, 2) during the postabsorptive phase, 3) during prolonged energy malnutrition or complete food deprivation 3 – Physiological and pathophysiological situations, such as fasting, gestation, lactation, physical exercise, obesity and metabolic syndrome, diabetes, cancer 4 – Introduction to nutrition 5 – Requirements in energy and macronutrients (nitrogen, amino acids, essential fatty acids, dietary fibres) 6 –Requirements in vitamins and minerals 7 - Seminars on the development of healthy food items and/or visits of food industries
Inline resources	Moodle

Bibliography	Notes de cours données par les professeurs (días disponibles sur Moodle) Livres de référence conseillés mais non imposés Slides used by the professors are available on Moodle Several references books are recommended (but not mandatory)
Other infos	This course is usually taught in English.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Biomedical Engineering	GBIO2M	4		
Advanced Master in Brewing Engineering	BRAS2MC	5		
Master [120] in Chemistry and Bioindustries	BIRC2M	4		
Master [120] in Agricultural Bioengineering	BIRA2M	4		