

COURSE OF STUDY *Food Science and Technology (L26)*
ACADEMIC YEAR 2023-2024

ACADEMIC SUBJECT *Biochemical processes of nutrition, 6 ETCS*

General information	
Year of the course	<i>Second</i>
Academic calendar (starting and ending date)	<i>Second semester (February 26th – June 21st, 2024)</i>
Credits (CFU/ETCS):	6
SSD	<i>Biochemistry (BIO/10)</i>
Language	<i>Italian</i>
Mode of attendance	<i>No Compulsory</i>

Professor/ Lecturer	
Name and Surname	<i>Angela Maria Serena Lezza</i>
E-mail	angelamariaserena.lezza@uniba.it
Telephone	<i>0805443309</i>
Department and address	<i>DIP. BBA– Università degli Studi di Bari</i>
Virtual room	<i>Microsoft Teams</i>
Office Hours (and modalities: e.g., by appointment, on line, etc.)	<i>Tuesday and Thursday afternoons by appointment only.</i>

Work schedule			
Hours			
Total	Lectures	Hands-on (theoretical-practical sessions in class)	Out-of-class study hours/ Self-study hours
<i>150</i>	<i>32</i>	<i>28</i>	<i>90</i>
CFU/ETCS			
<i>6</i>	<i>4</i>	<i>2</i>	

Learning Objectives	<i>The course aims to provide knowledge about the absorption and metabolic use of macro- and micro-nutrients so as to be able to appropriately evaluate the composition of foods and diets.</i>
Course prerequisites	<i>Prerequisites: C.I. Elements of Chemistry</i>

Teaching strategy	<i>The topics of the course will be treated with the help of Power Point presentations. The exercises will consist of examples of experimental determinations in the classroom, projection of films and presentation of case studies. All the material used for the lessons will be made available to students on special web platforms.</i>
Expected learning outcomes in terms of	
Knowledge and understanding on:	<ul style="list-style-type: none"> • In-depth knowledge of the biochemical processes of nutrition including: chemical composition of foods and their digestive / metabolic use. • Knowledge of the specific needs for the different nutrients and of the pathologies generated by incorrect nutrition.

Applying knowledge and understanding on:	<ul style="list-style-type: none"> Ability to apply the notions, acquired in the course, to the evaluation of the content of specific nutrients in different foods and their adequacy to particular needs. Ability to assess the suitability of diets applied to specific cases.
Soft skills	<ul style="list-style-type: none"> Making informed judgments and choices: Ability to identify the possibility of introducing alternative components into a food or particular foods in a nutritional regime to meet certain dietary needs. Communicating knowledge and understanding: Ability to appropriately use tools for written and oral communication in Italian and English and to elaborate presentations for the dissemination at various levels of useful notions. Capacities to continue learning: Ability to deepen the problems related to nutrition in maintaining a state of individual well-being and in the prevention / management of pathologies through consultation of updated bibliographic material and participation to seminars or thematic conferences.
Syllabus	
Content knowledge	<ul style="list-style-type: none"> Glycides. Digestion and absorption of dietary carbohydrates. Transport of glucose by means of the different GluTs. Metabolic use of dietary glucose. Hormonal regulation of glycemic homeostasis in the body, diabetes. Lipids. Digestion and absorption of food lipids. Metabolic use of dietary fatty acids. Triglycerides and cholesterol: food intake and regulation of biosynthesis. Hormonal regulation of lipolysis. Lipoproteins: classes and metabolic pathways. Blood lipid setup. Essential fatty acids. Proteins. Digestion of dietary proteins and absorption of the constituent amino acids. Biological value of food proteins. Essential amino acids: intake and metabolism. Minimum protein intake. Amino acids in the post-prandial and post-absorption phases. Fat-soluble vitamins: A, D, E, K. Water-soluble vitamins: B complex and Vitamin C. Inorganic elements. Water and mineral salts (Ca, P, Mg, Na, K, Cl, Fe, Fl, Zn, Se, I). Factors determining nutritional status, regulation of food intake and body weight. Assessment of individual energy needs. LARN analysis and feeding guidelines. Food pyramids and biochemical evaluation of different diets.
Texts and readings	Biochemistry of foods by N.A. Eskin and Fereidoon Shahidi, Elsevier 2012; Food biochemistry by C. Alais and G. Linden, Springer 2012
Notes, additional materials	<ul style="list-style-type: none"> Notes, slides and other bibliographic materials will be provided during the course.
Repository	All teaching material will be available to students on web platforms (class Teams code 7r76y63).

Assessment	
Assessment methods	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom.</p> <p>Students may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will concur to the final evaluation and will be considered valid for one academic year (Art. 4 of the Didactic Regulations of the Master's Degree Course in Food Science and Technology). The result of the mid-term exam is communicated by publication in the student's electronic register and contributes to the assessment of the profit examination</p>

	<p>by means of calculation of the weighted average. The exam for foreign students may be conducted in English as described above.</p>
Assessment criteria	<ul style="list-style-type: none"> • Knowledge and understanding: • In-depth knowledge of the chemical composition and digestive/metabolic use of foods and the specific needs for different nutrients. • Applying knowledge and understanding: • Ability to identify possible nutritional strategies for metabolic alterations due to diseases related to incorrect nutrition. Assessment of the suitability of certain foods for particular diets. • Autonomy of judgment: • Ability to evaluate the possibility of introducing specific diets for the maintenance of a state of individual well-being. • Formulate reasonable assumptions for the composition of foods. • Communicating knowledge and understanding: • Ability to make the specific compositions of foods and the reasons for the choice of certain diets understood in an appropriate way. • Communication skills: • Ability to use an appropriate technical language in presentations. • Capacities to continue learning: • Ability to constantly and autonomously update the notions about the possibilities of innovating foods and their combinations in diets.
Final exam and grading criteria	<p>The assessment of the student's preparation is based on predetermined criteria in accordance with the Didactic Regulations of the Master's Degree Course in Food Science and Technology (art. 4). The Examination Committee has a score ranging from a minimum of 18 to a maximum of 30 points for a positive assessment of the student's performance. By unanimous vote of its members, the Board may award honours in cases where the final mark is 30.</p>
Further information	
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