

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	FOOD AND NUTRITIONAL SCIENCES		
<b>ACADEMIC UNIT</b>	FOOD SCIENCE AND HUMAN NUTRITION		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	595	<b>SEMESTER</b>	4th
<b>COURSE TITLE</b>	NUTRITION AND METABOLISM		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
Lectures and Practice Exercises		4	3
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Special background		
<b>PREREQUISITE COURSES:</b>	BIOCHEMISTRY, BIOLOGY		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	YES (English)		
<b>COURSE WEBSITE (URL)</b>	<a href="https://w1.aua.gr/etda/courses">https://w1.aua.gr/etda/courses</a>		

### 2. LEARNING OUTCOMES

#### Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

The course constitutes the core introductory course in Nutrition and Metabolism. Its content aims to introduce students to the fundamental concepts of the processes of digestion, absorption, bioavailability, and metabolism of macronutrients and micronutrients.

The course also addresses introductory concepts related to the interactions between nutrients and

intermediate products of metabolism.

Finally, the course aims to enable students to understand the integration of energy metabolism, the physiological response of the body to food deprivation, the effects of physical activity on metabolism, oxidative and antioxidative processes, and the relationship between nutrition, macronutrient and micronutrient metabolism, and the function of body organs and systems.

### Learning Outcomes

Upon successful completion of the course, the students will be able to:

- Describe and explain the basic principles of digestion, absorption, bioavailability, and metabolism of macronutrients and micronutrients in the human body
- Analyze the main metabolic pathways of carbohydrates, lipids, proteins, vitamins, and trace elements, and relate their function to energy balance
- Interpret the mechanisms regulating metabolic homeostasis and the adaptation of the organism to conditions such as fasting, the postprandial state, physical activity/exercise, and disease
- Relate nutrition and nutrient metabolism to the function of major organs and body systems
- Evaluate, at a basic level, the role of nutrients in the development and progression of chronic diseases, such as obesity, diabetes mellitus, and cardiovascular diseases

### General Competences

*Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?*

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>... ..</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>... ..</i>

The course aims to develop the following general competences:

- Search for, analysis, and synthesis of data and information, using appropriate technologies
- Decision-making, at a basic level, based on scientific evidence
- Independent work
- Working in an interdisciplinary environment
- Critical and self-critical thinking
- Promotion of free, creative, and inductive thinking

## 3. SYLLABUS

1. Basic concepts of Nutrition and Metabolism: Definitions, scope and objectives of the course. Relationship between nutrition, metabolism, and health
2. Digestive system: Digestion, absorption, and bioavailability of nutrients
3. Energy metabolism: Energy production, storage, and utilization in the human body
4. Regulation of food intake: Neurohormonal mechanisms; role of the brain, hormones, and biological signals
5. Carbohydrate metabolism
6. Protein metabolism

- 7. Lipid metabolism
- 8. Lipoprotein metabolism
- 9. Metabolism of water-soluble vitamins
- 11. Trace elements metabolism
- 12. Basic principles of nutrigenetics and nutrigenomics
- 13. Nutrients and chronic diseases

#### 4. TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face-to-face, in class											
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	Lecture presentations provided in digital format Support of the learning process through the e-class electronic learning platform Provision of educational material and relevant bibliography											
<b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i>  <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	<table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Activity</th> <th style="text-align: center;">Semester workload</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: center;">50</td> </tr> <tr> <td>Independent Study</td> <td style="text-align: center;">25</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td>Course total</td> <td style="text-align: center;"><b>75</b></td> </tr> </tbody> </table>		Activity	Semester workload	Lectures	50	Independent Study	25			Course total	<b>75</b>
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<b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i>  <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i>  <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	I. Written final examination (100%), which includes: Multiple-choice questions Essay-type (extended response) questions											

#### 5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

David Bender. Εισαγωγή στη Διατροφή και τον Μεταβολισμό. Επιστημονική Επιμέλεια Έκδοσης: Αιμιλία Παπακωνσταντίνου, Αντώνιος Ε. Κουτελιδάκης, Πολυδεύκης Χατζόπουλος, Αντώνης Ζαμπέλας. Επιστημονικές Εκδόσεις Broken Hill Publishers LTD, 2019, Κωδικός Συγγράμματος στον Εύδοξο: 77107225

- *Related academic journals:*

*Nutrition and Metabolism, Journal of Nutrition and Metabolism, Annals of Nutrition and Metabolism, Human Nutrition & Metabolism, Journal of Clinical Nutrition and Metabolism, Nutrition, Metabolism and Cardiovascular Diseases*