

MEDBIOT-E03: NUTRIGENOMICS	
GENERAL INFORMATION	
Course Coordinator(s)	Ljubica Glavaš-Obrovac, PhD, full prof. with tenure
Associate(s)	Mario Štefanić, MD, PhD, Assoc. Prof. Teuta Opačak-Bernardi, PhD, Assist. Prof. Stana Tokić, PhD, Assist. Prof. Barbara Viljetić, PhD, Assist. Prof. Marijana Jukić, PhD
Study Programme	Interdisciplinary Graduate Study Programme in English: Biotechnology
Course Status	Elective
Year of Study, Semester	2 nd year / 4 th Semester
Credits (ECTS)	4
Teaching Method (number of classes)	Lectures: 15; Seminars: 30; Exercises: -
Expected Number of Students in the Course	25-30
COURSE DESCRIPTION	
Course Aims	
To introduce students how food components affect gene expression directly or indirectly, thereby altering metabolic pathways. Also, introduce students to the importance of certain polymorphisms and their role in the susceptibility of some genotypes to changes in diet and cell homeostasis.	
Prerequisites for Enrolment and the Entry Competencies Required for the Course	
Completed and passed courses from 1 st year of the study.	
Learning Outcomes at the Programme Level Contributed by the Course	
BIOTECH-2; BIOTECH-4; BIOTECH-7; BIOTECH-10; MEDBIOT-2; MEDBIOT-3	
Learning Outcomes at the Course Level	
After completing the course, the student will be able to:	
<ol style="list-style-type: none"> 1. Link the impact of macro and micronutrients on the gene expression 2. Assess the importance of polymorphisms in dietary adjustment 3. Recommend bioinformatics tools for genome analysis 4. Recommend possible applications of bioinformatics tools in nutrigenomics 5. Based on the results of scientific studies, provide a reasoned explanation how dietary adjustments can contribute to improving the overall condition of human organisms 	
Course Content	
<p>Lectures: An introduction to nutrigenomics; The role of micronutrients and macronutrients in metabolism; SNP and bioinformatics; Tools for genome analysis and their applications in nutrigenomics; Gene polymorphisms and genotype sensitivity to diet type; Transcription factors and how they may mediate food-gene interactions; Nutrition and genes associated with disease onset; Functional food and nutrition adapted to sensitive genotype; The role of nutraceuticals in health promotion and their mechanism of action; Benefits and questionable effects of nutraceuticals.</p> <p>Seminars: Tools for genome analysis and their application in nutrigenomics; Gene variants; Nutrition and complex diseases; Evidence for gene-food interactions.</p>	
Teaching Methods	
Lectures and e-learning based seminars	
Students' Obligations	
Attendance at all forms of classes is mandatory and the students are obligated to attend all knowledge tests. The students may be absent from 30% (full-time students) and 50% (part-time students) of each of the forms of classes, provided that the absence is justified. An exercise or a seminar which has not been completed must be made up through a midterm exam.	
Monitoring the Activity of the Students (Connecting Learning Outcomes, Teaching Methods, and	

Grading)						
Class-related activity	ECTS	Learning outcome	Student activity	Evaluation method	Grade points	
					Min.	Max.
Attending and active participation (lectures and seminars)	1.6	3,4	Attendance at classes Seminar work	Keeping records Presentation of seminar work	2	5
					12	35
Final exam	2.4	1-5	Studying for the final exam	Written exam	36	60
Total	4				50	100

Evaluation of the written part of the final exam:

Percentage of correct answers (%)	Grade
>95.00	60
90.00-94.99	55
85.00-89.99	51
80.00-84.99	48
75.00-79.99	45
70.00-74.99	42
65.00-69.99	39
60.00-64.99	36

Forming the final grade:

The points granted for the final exam are added to the grade points awarded during class attendance. The grading process is conducted by absolute distribution, i.e. based on total achievements, and compared to the numerical system in the following manner:

A – Excellent (5): 90-100 grade points; B – Very Good (4): 80-89.99 grade points; C – Good (3): 65-79.99 grade points; D – sufficient (2): 50-64.99 grade points

Mandatory Literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Mocchegiani and M. Malavolta (Ed):Molecular Basis of Nutrition and Aging. A Volume in the Molecular Nutrition Series; ISBN: 978-0-12-801816-3; print. Academic Press; 2016;	-	Yes

Additional Literature

1. L. R. Ferguson (Ed). Nutrigenomics and Nutrigenetics in Functional Foods and Personalized Nutrition, 1st Ed, 2013.
2. Scientific and professional papers related to particular chapters (available online)

Quality Assurance Procedures Designed to Ensure the Acquisition of Outcomes and Competencies

Anonymous, quantitative, standardized student survey on the course and the teacher's work implemented by the Quality improvement office of the Faculty of Medicine Osijek and/or the Faculty of Food Technology Osijek.

Note

E-learning is not included in the class quota, but it is used in teaching and it contains links to various sites and video and audio materials available on websites.