

GENE AND FOOD INTERACTIONS	
GENERAL INFORMATION	
Course coordinator	Professor Ljubica Glavaš-Obrovac, PhD
Assistant/Associate	Asst. Prof. Barbara Viljetić, PhD Assoc. Prof. Mario Štefanić, MD, PhD
Study Programme	Integrated undergraduate and graduate university study of Medicine
Status of the course	Elective
Year of study, semester	3 rd year, 6 st semester
ECTS	2
Workload (hours)	Lectures (13); Seminars (12)
Expected number of students	10-30
COURSE DESCRIPTION	
Course objectives	
The aim of this course is to introduce students to how food ingredients affect gene expression directly or indirectly and thus change metabolic pathways. Furthermore, to familiarize students with the significance of certain polymorphisms and their role in the susceptibility of some genotypes to changes in nutrition and cell homeostasis.	
Enrolment requirements and entry competencies	
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Learning outcomes at the Programme level	
1.1., 2.2., 3.4.	
Learning outcomes (5-10)	
After attending lectures, participating in seminars and exercises, self-study and passing the examination, students will be able to: <ol style="list-style-type: none"> 1. relate the effects of macro and micronutrients on gene expression. 2. evaluate the importance of polymorphisms in genes in diet adaptation. 3. apply bioinformatics tools for genome analysis. 4. recommend bioinformatics tools for use in nutrigenomics. 5. explain with argumentation how adjusting the diet can contribute to the improvement of the general condition of the organism on the basis of the results of scientific studies. 	
Course content	
<p>Lectures</p> <p>What is nutrigenomics; The role of micronutrients and macronutrients in metabolism; SNPs and bioinformatics. Tools for genome analysis and their application in nutrigenomics; Polymorphism in genes and sensitivity of genotypes to type of diet; Transcription factors and how they can mediate interactions between food and genes; Diet and genes associated with the onset of disease. Functional food and adaptation of nutrition to sensitive genotype. The role of nutraceuticals in improving health and the mechanism of their action; Benefits and questionable effects of nutraceuticals.</p> <p>Seminars</p> <p>Tools for genome analysis and their application in nutrigenomics; Gene variants; Nutrition and complex diseases; Evidence for gene-food interactions.</p>	
Mode of teaching	
Lectures; Problem-solving seminars	

Student obligations

Students are expected to attend all class sessions, as well as to take all the examinations. However, they are allowed for excused absences, totalling 30% of all classes.

Uncompleted seminar must be passed. The student is obliged to take all forms of knowledge testing.

Monitoring student work (alignment of learning outcomes, teaching methods, and grading)

Teaching activity	ECTS	Learnig outcome	Student activity	Assessment methods	Grade points	
					Min.	Max.
Class attendance	0.25	1-5	Class attendance; exercises	Evidence sheet; evaluation	2	5
Seminars	0.75		Seminar work	Presentation	12	35
Final exam	1		Learning for the exams	Grading of the written exam	36	60
Total	2				50	100

Evaluation/grading of the final written examination:

Percentage of correct answers (%)	Grade points
>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

Calculation of final grade:

Students who achieved 36 or more points in the final exam, the points obtained in the final exam are added to the grade points obtained during the class, and this sum constitutes the final grade. Since the study program schedule descriptive assessment of elective courses, the course coordinator awards the grade "passed" to a student who achieves 50 or more grade points in the course.

Required reading (available in the library and through other media)

Title	Number of copies in the library	Availability through other media
1. Mocchegiani E, Malavolta M: Molecular Basis of Nutrition and	0	

Aging. In the Molecular Nutrition Series. Academic Press, 2016.		
Additional reading		
<ol style="list-style-type: none"> 1. Ferguson LR: Nutrigenomics and Nutrigenetics in Functional Foods and Personalized Nutrition, 1st Ed., 2013. 2. Scientific and professional works related to individual chapters (available online). 		
Course evaluation procedures		
Anonymous, quantitative, standardized student survey providing feedback on the course as well as on the work of course coordinators and their assistants/associates is being conducted by the QA Office of the Faculty of medicine Osijek.		
Note /Other		
E-learning does not count towards course contact hours, but is being used in teaching and comprises links to various web pages, as well as video and audio materials available on web pages.		