

GENERAL INFORMATION		
Course	Vitamins and Minerals in Health and Disease	
Course coordinator	Prof. Ljubica Glavaš-Obrovac, MSc Biotechnol, PhD	
Assistant/Associate	Asst. Prof. Goran Ćurić, MD, PhD Asst. Prof. Teuta Opačak-Bernardi, MBiolMol, PhD,	
Study Programme	Integrated undergraduate and graduate university study of Medicine in German language	
Status of the course	Elective	
Year of study, semester	1 st year, 2 nd semester	
Grading scale and workload	ECTS	1
	Hours (L+S+E)	15 (5+10+0)
COURSE DESCRIPTION		
Course objectives		
Expand existing knowledge about vitamins and minerals and actively engage students in acquiring new knowledge about the absorption, transport, and metabolism of vitamins and minerals in the human body.		
Enrolment requirements and entry competencies		
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Learning outcomes at the Program level		
1.1., 2.1., 3.4., 3.5.		
Learning outcomes		
<p>After successfully completing the course, students will be able to:</p> <ol style="list-style-type: none"> 1. explain the structure and occurrence of vitamins in the diet as well as their transport, absorption and influence on metabolic processes. 2. comment on the occurrence of minerals in the diet, their transport and absorption and influence on metabolic processes. 3. critically evaluate metabolic disorders due to inadequate or excessive intake of vitamins and minerals 4. apply acquired knowledge about the metabolic role of vitamins and minerals in solving specific tasks related to pathobiochemical conditions due to inadequate or excessive intake of vitamins and minerals. 		
Course content		

Lectures: *Vitamins:* The role of vitamins in metabolism. Water-soluble vitamins and fat-soluble vitamins. Sources of vitamins. Digestion, absorption, transport and storage of vitamins. Function and mode of action of vitamins. Interactions with other nutrients and drugs. Metabolism and excretion of vitamins. *Minerals:* Macrominerals (calcium, phosphorus, magnesium, sodium, potassium, chlorides). Microminerals (iron, zinc, copper, selenium, cadmium, iodine, magnesium, molybdenum, fluorides). Overview of ions in the human body. In general, about their importance for health. The role of minerals in metabolism. Sources of minerals. Digestion, absorption, transport and storage of minerals. Function and mode of action of minerals. Interactions with other nutrients and medications. Excretion of minerals.

Seminars: Recommended daily intake of vitamins. Diseases associated with inadequate vitamin intake. Toxicity. Vitamin supplements - benefits and harms. Recommended daily allowance. Toxicity. Mechanisms of maintaining ion concentration in the body. Vitamins and minerals in disease prevention and health promotion.

Mode of teaching	<input checked="" type="checkbox"/> lectures	<input checked="" type="checkbox"/> independent tasks
	<input checked="" type="checkbox"/> seminars and workshops	<input checked="" type="checkbox"/> multimedia and network
	<input type="checkbox"/> exercises	<input type="checkbox"/> laboratory
	<input type="checkbox"/> distance education	<input type="checkbox"/> mentoring work
	<input type="checkbox"/> field teaching	<input type="checkbox"/> other

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 up to 30% of all classes. Students are given the topic of the seminar paper, which they have to write in the form of an essay and make one Power Point presentation as well.

Monitoring student work

Attending classes	x	Class activity	x	Seminar work	x	Experimental work	
Written exam		Oral exam		Essay	x	Research	
Project		Continuous knowledge verification		Paper		Practical work	
Portfolio							

Grading and evaluation of student work during classes and of the final examination

Teaching activity	ECTS	Learning outcome	Student activity	Assessment methods	Grade points	
					Min.	Max.
Lectures	0.25	1 - 4	Class attendance	Attendance record	10	20
Seminars	0.75	4	Preparation and presentation of seminar	Seminar presentation	40	80
Total	1				50	100

Calculation of final grade:

Based on the total sum of the points awarded during the course and the final exam, the final grade is determined according to the following distribution:

A – excellent (5): 90-100 grade points; B – very good (4): 70-79,99 grade points; C – good (3): 60-69,99 grade points; D – sufficient (2): 50-59,99 grade points

Required reading

Hans K. Biesalski. Vitamine und Minerale, Thieme, Stuttgart, 2016.

Additional reading

1. Gropper, S.S., Smith, J.L., Groff, J.L. Advanced nutrition and human metabolism, 4th Ed., Thomson-Wadsworth, 2005.
2. Selected scientific papers.

Number of copies of required literature in relation to the number of students currently attending classes in the course

Title	Number of copies	Number of students
Hans K. Biesalski. Vitamine und Minerale, Thieme, Stuttgart, 2016.		

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.