

NUTRITION THERAPY

1. COURSE DESCRIPTION – GENERAL INFORMATION	
1.1. Course teacher	Associate Professor Dubravka Vitali Čepo
1.2. Associate teachers	Kristina Radić, MPharm Martina Teskera, MNutr
1.3. Graduate programme	Integrated study of pharmacy
1.4. Status of the course	Elective
1.5. Year of study, Semester	5th Year, 9th Semester
1.6. Credit value (ECTS)	2.5
1.7. Type of instruction (number of hours L+E+S+e-learning)	15+8+7+0
1.8. Expected enrolment in the course	30-50
1.9. Level of use of e-learning (1, 2, 3 level), percentage of instruction in the course on line (20% maximum)	1
2. COURSE DESCRIPTION	
2.1. Course objectives	Students will learn methods for assessments of patient's nutritional status; get to know the mechanisms by which various changes of nutritional status affect health outcomes; will be introduced to the specifics of nutrition and supplementation needed for different age groups and in different physiological states. Furthermore, students will be acquainted with basic diagnostic tools and medical nutrition therapy guidelines (including supplementation) of the most common health disorders with particular emphasis set on understanding the underlying mechanisms and importance of possible food-drug and supplement-drug interactions. Students will be trained to use relevant scientific/professional databases for enhancing and updating their knowledge about the quality of dietary supplements, their dosage, safety, evidence-based efficacy and clinically significant interactions with medications.
2.2. Enrolment requirements and required entry competences for the course	Passed exam: Physiological and Biochemical Aspects of Nutrition. Student competences: Knowledge of the etiology and pathophysiology of diabetes, cardiovascular disease, obesity, malnutrition and allergies. Knowledge of basic biochemical processes in the body. Knowledge of food chemistry and nutritional biochemistry. Understanding of DRI values.
2.3. Learning outcomes at the level of the study programme to which the course contributes	<ul style="list-style-type: none"> • Development of professional skills necessary for conducting pharmaceutical care. • Development of communication skills that will ensure a positive interaction with patients and colleagues. • Informing and counseling patients about the proper use of drugs, identifying and avoiding drug interactions; counseling on disease prevention and health preservation. • Use of information technology and databases in order to improve professional knowledge and self-education.
2.4. Expected learning outcomes at the level of the course (4-10 learning outcomes)	<p>After passing the course, students will be able to :</p> <ol style="list-style-type: none"> 1. Assess the patient's general nutritional status on the basis of interviews and / or laboratory findings as well as to apply other methods to evaluate nutritive status. 2. Interpret dietary supplement labels and search relevant literature sources and recommend supplements for appropriate indications (evidence-based approach) and in recommended dosage. 3. Identify and anticipate significant food - drug and dietary supplement-drug interactions; to understand the mechanisms of these interactions and to propose ways to avoid such interactions. 4. Advise patients (different age groups or specific physiological states such as pregnancy or lactation) on the appropriate diet and possible supplementation.

5. Recommend medical nutrition therapy and use of dietary supplements in various pathological conditions (diabetes, cardiovascular disease, allergies, hypertension, anemia, etc.).
6. Explain the mechanisms by which changes in eating patterns affect the health maintenance, disease prevention and treatment and prevention of complications of certain diseases.

2.5. Course content broken down in detail by weekly class schedule (syllabus)

- LECTURES:**
- Nutrition in the life cycle: nutrition during pregnancy and lactation. Nutritional status and conception; fetal origin hypothesis. Nutritional support during pregnancy and lactation: vitamins and minerals. Drugs and herbal supplements during pregnancy and lactation. Nutrition during infancy and childhood. Breastfeeding and formula feeding. Nutritional supplementation in childhood. Specific dietary patterns: toddlers and children. Nutrition in adolescence. Specific nutritive needs and dietary patterns. Nutrition in adult years. Dietary modifications and nutritional supplementation for the prevention of diseases. Nutrition in the elderly: specific dietary patterns, problems with feeding, malnutrition, nutritional supplementation.
 - Food-drug interactions: mechanism of interactions. Impact of food on drug metabolism. Impact of drug therapy on nutritional status. Interaction of drugs with herbal/nutritional supplements (basics).
 - Diagnosis of (pre)diabetes and monitoring of glycemic control: basic biochemical parameters. Nutrition therapy for pre- diabetes. Nutrition therapy in diabetes. Classic and contemporary approach to meal planning in insulin-dependent diabetes (basic techniques in carbohydrate counting; using of meal replacements). Types of insulin and insulin sensitivity. Nutrition therapy of diabetes complications (hypoglycemia, ketoacidosis, micro- and macro- vascular complications, and neuropathy). Dietary supplements and diabetes.
 - Nutrition therapy in cardiovascular disease (CVD). Nutrition and atherosclerosis. Basic biochemical parameters. Importance of body weight maintenance for maintenance of blood pressure and in CVD. Metabolic syndrome and Mediterranean diet. Nutritional supplementation in CVD.
 - Nutrition therapy of anemia, the most important nutritional anemia. Diagnostics and nutrition therapy of iron-deficiency anemia. Dietary supplementation in sideropenic anemia. Megaloblastic anemia. Diagnostics, nutrition therapy, and prevention.
- SEMINARS:**
- Nutritional supplements: quality and safety; evidence-based indications and types of evidences; dosage and safety of usage, clinically significant interactions with drugs and food. Relevant information source of dietary supplements.
 - Case study: choosing the best supplement, rational use of dietary supplement, and therapeutic algorithms.
- PRACTICUM:**
- Assessment of nutritional status: height, weight, waist to hip ratio, percentage of body fat, basal metabolism needs.
 - Assessment of risk for cardiovascular disease (Framingham study). Blood pressure measurement.
 - Estimation of serum antioxidant potential – correlation with nutritional habits.
 - Measuring of blood glucose – interpretation of obtained results. Usage of glucometer.

2.6. Type of instruction	<u>lectures</u> <u>seminars</u> <u>workshops</u> <u>exercises</u> online in entirety mixed e-learning mixed m-learning	field work <u>independent study</u> multimedia and the internet work with the mentor (other)		
2.7. Student responsibilities	Attendance in lectures. Attendance and active participation in seminars, and seminar essay. Attendance and active participation in lab practicum. Passing final test in exercise.			
2.8. Screening of student's work (specify the proportion of ECTS credits for each activity so that the total number of CTS credits is equal to the credit value of the course)	Class attendance	0.5	Seminar essay	0.25
	Experimental work	0.25	Oral exam	
	Essay		Project	
	Tests		Practical training	
	Written exam	1.5	(Other--describe)	
	Research		(Other--describe)	
	Report		(Other--describe)	
2.9. Grading and evaluation of student work over the course of instruction and at a final exam	During the course exercise test as well as activity and student's preparedness is evaluated. Final test is written and oral.			
2.10. Required literature (available at the library and via other media)	Title	Number of copies at the library	Availability via other media	
	Lectures' synopsis (D Vitali Čepo)		Merlin	
	Internal course material - Dijetoterapija praktikum (D Vitali Čepo, K Radić, M Teskera)		Merlin	
2.11. Optional literature	<ol style="list-style-type: none"> 1. Marcia Nahikian Nelms, Sara Long Roth: Medical Nutrition Therapy: A Case Study Approach, 4th edition, Cenhage Learning, USA, 2014. 2. Pamela Mason: Dietary Supplements, 4th edition, Pharmaceutical Press, 2011. 3. Volker Schulz, Rudolf Hänsel, Mark Blumenthal, V. E. Tyler, T.C. Telger: Rational Phytotherapy: A Reference Guide for Physicians and Pharmacists, Springer, 2004. 4. https://fnic.nal.usda.gov/ 5. http://online.lexi.com/lco/action/home 6. http://www.consumerlab.com/ 			
2.12. Methods of monitoring quality that ensure acquisition of exit competences	Learning outcomes are evaluated through activity during the exercises, during the seminars, and written exam results.			
2.13. Comments				