1. COURSE DECRIPTION – GENERAL INFORMATION			
1.1. Course teacher	Assistant Professor Dubravka Vitali Čepo	1.6. Year of study	5.
1.2. Name of the course	**Nutrition Therapy**	1.7. Credit value (ECTS)	2,5
1.3. Associate teachers		1.8. Type of instruction (number of hours L+S+E+e-learning)	15+8+7
1.4. Study programme (undergraduate, graduate, integrated)	Integrated study of pharmacy Integrated study of medicinal biochemistry	1.9. Expected enrolment in the course	10-20
1.5. Status of the course	Elective	1.10. Level of use of e-learning (1, 2, 3 level), percentage of instruction in the course on line (20% maximum)	2.
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: obesity and malnutrition, diabetes, hypertension, cardiovascular diseases, anemia and allergies, 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: Nutritional Biochemistry. 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		
2.3. Learning outcomes at the level of the study programme to which the course contributes	• Development of professional skills necessary for conducting pharmaceutical care 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. • Development of communication skills that will ensure a positive interaction with patients and colleagues.
2.4. Expected learning outcomes at the level of the course (4-10 learning outcomes)	After passing the course, students will be able to : 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 ages 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, anaemia). 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: • Basics of healthy nutrition. Assessment of nutritional status. Body weight and health. Overweight and obesity: causes, physiology, biochemistry. Obesity related diseases. Medical Nutrition therapy for overweight and obese. Underweight: causes, physiology and biochemistry. Nutrition therapy for eating disorders – AN, BN. Drugs and body weight. • Nutrition in the life cycle: nutrition during pregnancy. Nutritional status and conception. Nutrition during pregnancy: basics; foetal origin hypothesis. Nutritional support during pregnancy: vitamins and minerals. Drugs and herbal supplements during pregnancy. • Nutrition in the life cycle: nutrition during infancy and childhood. Breastfeeding: importance, nutritional composition of mother's milk. Formula-feeding: when, how, types of formulas. Assessment of infant's nutritional status. Nutritional supplementation during infancy. Specific dietary patterns: toddlers and children. Nutritional supplementation in childhood. Obesity in childhood. • Nutrition in the life cycle: nutrition in the 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: absorption, pharmacokinetic interactions, pharmacodynamic 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. Glycemic index of food. Types of insulin, insulin sensitivity. Classic and contemporary approach to meal planning in insulin-dependent diabetes. Nutritional supplementation in diabetes. • Nutrition therapy in cardiovascular disease (CVD). Nutrition and atherosclerosis. Nutrition and blood pressure. Importance of body weight maintenance for maintenance of blood pressure and in CVD.. Nutritional supplementation in CVD. Medical nutrition therapy of nutritional-deficiency anemia. • Adverse reactions to foods: aversion, poisoning, intolerance. Food allergy: mechanism, symptoms, biochemical parameters and diagnosis, therapy. Nutrition therapy for specific intolerance (celiac disease, histamine intolerance). SEMINARS: • Nutritional supplements: quality, safety, efficiency. Recommendations for nutritional supplementation: evidence-based approach. Introduction to on-line data-bases: lexicomp, consumerlab. • Case study: pharmaceutical advice on the quality and/or efficiency of nutritional supplement. • Case study: pharmaceutical advice on the quality and/or efficiency of nutritional supplement. • Students' reports: assay on quality, safety and efficiency of nutritional supplement (by student's choice). PRACTICUM • Assessment of nutritional status: height weight, percentage of body fat, basal metabolism needs • Estimation of serum antioxidant potential –correlation with nutritional habbits • Measuring of blood glucose – interpretation of obtained results • Assesment of risk for cardiovascular disease

2.6. Type of instruction	**lectures** **seminars and workshops** exercises online in entirety mixed e-learning field work	**independent study** multimedia and the internet laboratory work with the mentor **lab practicum**	2.7. Comments:
2.8. Student responsibilities	Attendance and active participation in seminars; Attendance and active participation in lab practicum		

2.9. 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	Research		Practical training	
	Experimental work	0.25	Report			
	Essay		Seminar essay	0,25	(Other--describe)	
	Tests		Oral exam		(Other—describe)	
	Written exam	1,5	Project		(Other—describe)	

2.1. Grading and evaluation of	During the course attendance and active participation in lab practicum and seminars is evaluated. The final exam is

student work over the course of instruction and at a final exam	written (a combination of multiple-choice questions and essay-type questions).		
2.2. Required literature (available at the library and via other media)	**Title**	**Number of copies at the library**	**Availability via other media**
	lectures		On-line
2.12. Optional literature (at the time of the submission of the study programme proposal)	Marcia Nelms (Author), Sara Long Roth. Medical Nutrition Therapy: A Case Study Approach. 2013 | ISBN-10: 1133593151 | ISBN-13: 978-1133593157 | Pamela Mason. Dietary Supplements. 2011 | ISBN-10: 085369883X | ISBN-13: 978-0853698838 | Volker Schulz, Rudolf Hänsel, Mark Blumenthal, V. E. Tyler, T.C. Telger. Rational Phytotherapy: A Reference Guide for Physicians and Pharmacists. 2004 ISBN-13: 978-3540408321 | E		
2.13. Methods of monitoring quality that ensure acquisition of exit competences	Learning outcomes 1-2 will be assessed during seminars, and learning outcomes 3-6 with written examination.		