

Course Unit Descriptor

<b>Study Programme:</b> Master Academic Studies in Biochemistry
<b>Course Unit Title:</b> Chromatographic Analysis of Food and Supplements
<b>Course Unit Code:</b> IB-521
<b>Name of Lecturer(s):</b> Associate professor Dejan Orčić
<b>Type and Level of Studies:</b> Master of Science Degree
<b>Course Status (compulsory/elective):</b> elective
<b>Semester (winter/summer):</b> winter
<b>Language of instruction:</b> English
<b>Mode of course unit delivery (face-to-face/distance learning):</b> Face-to-face
<b>Number of ECTS Allocated:</b> 6
<b>Prerequisites:</b> none
<p><b>Course Aims:</b></p> <p>To provide students with wide knowledge of legislation in the field of food and dietary supplements quality and safety testing, as well as in field of accreditation of testing laboratories. To provide student the skills for independent development, adjustment and application of chromatographic methods for analysis of food and dietary supplements. To enable student to critically evaluate testing results and prepare reports on safety and quality of tested samples.</p>
<p><b>Learning Outcomes:</b></p> <p>After completing the course, student is able to: (1) demonstrate knowledge of current legislation related to food and dietary supplements quality and safety testing, and accreditation of testing laboratories, (2) demonstrate the ability to independently plan experiments and apply modern chromatographic methods, (3) independently test food and dietary supplements quality and safety, (4) independently critically evaluate compliance of testing results with legislation and formulate a report.</p>
<p><b>Syllabus:</b></p> <p><i>Theory</i></p> <p>Quality, authenticity and safety of food and dietary supplements – national and international legislation. Legal requirements for food and dietary supplements testing laboratories: laboratory accreditation. Laboratory techniques in food and dietary supplements testing – sample preparation, HPLC, GC, TLC. Quality, authenticity and safety parameters: natural components (lipids, carbohydrates, vitamins, amino acids, flavors, polyphenols), additives (acidulants, antioxidants, preservatives, sweeteners, bitterants, colors), contaminants (drugs, mycotoxins, packaging components, pesticides, polyamines, PCBs, PAHs, dioxins, natural toxins), active components and impurities in supplements. Reporting on testing results.</p> <p><i>Practice</i></p> <p>Determination of preservatives in beverages (HPLC). Determination of sugars and hydroxymethylfurfural in honey (HPLC). Determination of vitamin A, carotenes and antioxidants in margarine (HPLC). Determination of fatty acids profile and steroids in fat/oil (GC). Determination of pesticides in vegetables (GC). Authentication of herbal supplements (HPLC, TLC). Determination of caffeine in energy drink (HPLC). Determination of vitamins in vitamin supplement (HPLC).</p>
<p><b>Required Reading:</b></p> <p>1. Wittkowski R., Matissek R. (1990): Capillary GC in food control and research, Technomic, Lancaster, USA</p>

2. Gratzfeld-Hüsgen A., Schuster R. (2001): HPLC for food analysis – A primer, Agilent Techn., Germany			
<b>Weekly Contact Hours:</b>	<b>Lectures: 2</b>		<b>Practical work: 3</b>
<b>Teaching Methods:</b> Lectures, laboratory work, consulting, e-learning (OER and remote lab exercises)			
<b>Knowledge Assessment (maximum of 100 points): 100</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation	10	written exam	70
Practical work	20		