Course Unit Descriptor

Study Programme: Food engineering

Course Unit Title: Sweeteners in food industry

Course Unit Code: DPI2

Name of Lecturer(s): Zita Šereš

Type and Level of Studies: Doctoral Academic Studies

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter or summer

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 10

Prerequisites: None

Course Aims:

Introduction into sweetness phenomenon, physiology, sources of sweet flavor in food products, availability of various replacements (sweeteners) for sugar, as well as reasons for introducing sweeteners into human diet. Students will gather knowledge through this course that will allow them to make optimal decisions about sweetener selection or source of sweetness in food in developing new food products.

Learning Outcomes:

Based on the knowledge received through this course, students are taught to correctly determine type of sweetener, range and amount added to the products, as well as effect they want to achieve in regards to quality of the final product. Preparation of standard and specific food products for various consumer categories requires the knowledge of nutritional benefits of certain sweeteners, as well as the knowledge of the regulations regarding sweeteners, which are included in this course.

Syllabus:

Theory

Term sweeteners, classification of sweeteners into nutritional and non-nutritional, high calorie sugar replacements; Chemical composition, sources of sweetness for various sweetener groups in comparison to sucrose, sweetener reactions with other food components; Physicochemical properties of most significant nutritional and non-nutritional sweeteners that are widely used in food products; Raw materials and production process of nutritional and non-nutritional sweeteners; Application of sweeteners in confectionery industry, bakery, milk industry, juice production, processing of fruit and vegetables, additive industry, sauces, instant products etc.

Practice

Selective use of information on the given topic, individual research of the library fonds, scientific journals and internet searches. Selection of the available data, with special attention given to comparison of sweeteners. Formation of the opinion about the selected topic. Sensory analyses and comparison of different sweetness levels. In depth research of contemporary sweetener topics. Interpretation of current regulations.

Review: Presentation in written form on the topic included in the course, using clear, expert language with conclusions based on the correctly understood work aim.

Required Reading:

1. C.A.M. Hough, K.J. Parker, A.A. Vlitos: Developments in Sweeteners, Applied Science Publisher, London, 1979.

2. M. Mathlouthi, J.A. Kanters, G.G. Birch: Sweet-Taste Chemoreception, Elsevier Applied Science, London, 1993.
3. T.H. Grenby: Advances in Sweeteners, Balckie Academic & Professional, London, 1996.
4. R. Lipinsky, H. Schiweck: Handbuch for Süβunsmittel, B. Behr's Verlag, Hamburg, 1990.
5. L. O'Brien Nabors, R.C. Geraldi: Alternative Sweeteners, Marcel Dekker Inc., New York, 1981.

Weekly Contact Hours:	**Lectures:** 4	**Practical work:** 2

Teaching Methods:

Interactive lectures with application of the most contemporary computer software possibilities, use of contemporary scientific and expert journals, publications, internet searches. Selection of valid information about sweeteners, discussion of their applicability in industrial practices, analyses of their applicability from the technological and nutritional point of view.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Active class participation	20	written exam	/
Practical work	/	oral exam	40
Preliminary exam(s)	/		
Seminar(s)	40		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.