Study programme: Food Technology

Type and level of study: Bachelor's degree (240 ECTS) – First cycle

Course title: *Additives in the food industry*

Code: TI16

Lecturer: Associate Prof. Marko Petković, Ph. D., (Ass. Jelena Pantović)

Language of instruction: English

ECTS credits: 6

Prerequisite: /

Semester: autumn

Course objective

The classification, physicochemical characteristics, and functional roles of additives. Health implications and regulatory frameworks governing the use of additives. The categorization, chemical composition, quality standards, and analytical methods for detecting additives in raw materials and food products. Natural and synthetic colors. Essential preservatives, their effects on product shelf-life, and associated toxicological concerns. Natural, nature-identical, and artificial flavor compounds, along with their identification techniques. The chemical structures of emulsifiers, thickeners, antioxidants, stabilizers, and other additives. The emphasis on food additives on product quality. The mechanisms underlying the action of additives.

Learning outcomes

Understand the classification, physicochemical properties, and functional roles of food additives, along with their chemical compositions and quality standards. Analyze health implications and regulatory frameworks governing additive use. Apply analytical techniques for detecting additives in raw materials and food products. Distinguish between natural, nature-identical, and synthetic colorants and flavor compounds, including their identification methods. Evaluate essential preservatives, their impact on product shelf-life, and toxicological concerns. Describe the chemical structures of emulsifiers, thickeners, antioxidants, stabilizers, and other additives, assessing their influence on product quality. Explain the mechanisms underlying the action of additives in food systems..

Course contents

Theoretical instruction

This module covers the classification, properties, and roles of food additives, along with health and regulatory aspects. It addresses the chemical composition, quality standards, and detection methods for additives in food. Topics include natural and synthetic colors, preservatives, flavors, emulsifiers, thickeners, antioxidants, and stabilizers etc. The course explains how additives affect product quality and the mechanisms behind their action in food systems.

Practical instruction

Analysis of additives. Analytical methods in additive quality control. New methods of detection of additives.

Literature

1. Petković, M. Aditivi u prehrambenoj industriji. Agronomski fakultet u Čačku, Čačak (Univerzitet u Kragujevcu).
2. Smith, J., Hong-Shum, L. (2011). Food Additives Data Book, Blackwell Publishing Ltd.
3. Davidson, P.M., Salminen, S., Thorngate III J.H. (2002). Food Additives, 2nd Ed., Marcel Dekker, Inc., USA.

Hours of active teaching: 2+0+1	**Theoretical:** 2×15=45	**An alternative instructional approach:** 1×15=30

Teaching methods

• Interactive teaching, using video presentations.

• Individual consultations related to problems arising in theoretical and alternative classes, and laboratory exercises.

Assessment (maximum points 100)

Examination requirements	points	**Final exam**	points
Class participation	5	Written exam	
Practical participation sessions/tests	5	Oral exam	45
Class tests	30		
Practical tests	15		
Other			

Grading system

Grade	**ECTS**	**Description**
10	91 – 100	Excellent
9	81 – 90	Exceptionally good
8	71 – 80	Very good

7	61 – 70	Good
6	51 – 60	Passing